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Cooking up connections, dishing out diffusion

The culinary connections of ceramic griddle plates in northeast Africa

Steven Matthews



Abstract

The study of past foodways, especially bread traditions, has emerged as an exciting field of archaeological inquiry. Of note are flatbreads, and the ceramic griddle plates used in their production. These have both a historical and global distribution, with multiple centres for development and diffusion, reflecting the use of a variety of foodstuffs for making breads. Whilst such foods are familiar in Western Europe, typically as luxury or celebratory consumables like French crêpes and galettes or Dutch poffertjes and spekdik, the associated food technologies are not, having been replaced by modern analogues. Elsewhere flatbreads remain dietary staples, and this ubiquity is reflected in the technologies used to prepare them. It is no surprise then that griddle plates are a common feature of archaeological ceramic assemblages around the world. Griddle plate use, however, favours household-scale baking, being closely associated with non-elite culinary activities and domestic production of cooking wares. Their study has therefore focussed on local pottery techniques, culinary preferences, and ethnographic comparison. Coarse, handmade cooking vessels are rarely employed in the study of interregional interaction or cultural transmission. This is unfortunate, given the often wide distribution of similar cooking technologies. Interregional connections and cultural transmission should therefore be central to the study of the adoption of new culinary practices. Noting recent prehistoric and historical finds of ceramic griddle plates in Europe, we demonstrate the importance of tracing heritable continuity in culinary technologies. We aim to determine between local innovation and interregional diffusion in the spread and adoption of foodstuffs and food technologies, using current research into flatbread traditions and ceramic griddle plates during the early Iron Age of northeast Africa (c. 1000 BC-AD 1000).

Keywords

Foodways, flatbreads, griddle plates, northeast Africa, diffusion.

9.1 Introduction

The investigation of past foodways, and in particular the study of bread, has emerged as an exciting field of inquiry in archaeology.¹ This has been facilitated by the fact that food practices encompass the sorts of technologies, such as ceramic cooking pots, serving and consuming vessels, ovens, as well as stone tools, that survive well to form the archaeological record, including archaeobotanical and archaeozoological remains, and food residues. The study of foodways has also benefited from a general trend toward a greater concern with settlement and domestic contexts as the focus of excavation, rather than just elite, monumental or sepulchral sites. Concomitantly, this has increased analysis of handmade coarse wares, especially cooking vessels, which were traditionally overlooked in favour of wheelmade, fine or highly decorated ceramics. As a consequence, we have a greater appreciation of the range of food technologies and foodstuffs used in the past. Study of these cooking wares has typically been used to make inferences concerning local production techniques, subsistence strategies, and household social organisation. Less attention has been given to their usefulness for the study of interregional

interaction and cultural transmission.² Of particular significance for the archaeological study of culinary diffusion are the various food technologies used as part of bread traditions.

We offer here a discussion of the cultural transmission of a specific kind of bread technology – the ceramic griddle plate – that diffused widely across northeast Africa during the early Iron Age (c. 1000 BC-AD 1000), which we hope will be of particular interest in light of this book's theme. The remains of similar ceramic 'baking trays' or 'platters' are an increasingly common feature of domestic pottery assemblages from prehistoric and historic sites in Europe, such as the salt-marsh and (clay-on-)peat settlements of the pre-Roman and Roman Iron Age in the northern Netherlands.³ It is with great pleasure that I offer this contribution concerning our ongoing research on griddle plates in northeast Africa in honour of Annet's 65th birthday, in recognition of her substantial contribution to terp archaeology.⁴

1 E.g. Gremillion 2011; Hastorf 2016; Twiss 2019.

2 Matthews & Nowotnick 2019; Nowotnick & Matthews 2020.

3 E.g. Bakker & Van Sombeek 2018, 128, n. 7; Taayke 1996, figs. 45 (Westergo), 36 (central Groningen), 32 (Oostergo); Nieuwhof 2014, fig. 67, no. 1103/4/5-4202.

4 For the first results of the research in Africa, see Matthews & Nowotnick 2019; Nowotnick & Matthews 2020.



Fig. 9.1 A ceramic griddle plate dating to the late pre-Roman Iron Age and Roman Iron Age settlement at Harinxmaland, in the peat area bordering the salt-marsh area to the south, near Sneek (Friesland, the Netherlands). Photo M. Bakker.

9.2 Archaeology of bread

Bread is a common and popular foodstuff amongst almost all cultures, and comprises a dietary staple throughout history.⁵ Ancient breads vary in form, preparatory techniques, baking technologies, and constituent ingredients.⁶ Particularly common across western Eurasia and Africa are flatbreads.⁷ These comprise a diverse category, the only common characteristic being that they are typically quite thin.⁸ Flatbreads can be both leavened and unleavened, made from dough or batter, they can be baked in a range of ways, including the use of vertical as well as horizontal ovens, or over a hearth or heat source using a baking or griddle plate. As a consequence, flatbreads incorporate a range of edible variation. They have been categorised in a number of ways, for example, whether the flatbread is double- or single-layered.⁹ From an archaeological perspective, a useful grouping, based on variation in paste, use of raising agent, and morphology, comprises: 1) pancake breads, produced from batters, and unleavened; 2) pancake breads, produced from batters, and leavened; 3) flatbreads, produced from dough, and unleavened; 3) flatbreads, produced from dough, and leavened.¹⁰ Unlike layering, these differences can largely be identified archaeologically, on the basis of archaeobotanical evidence and organic residue analysis.¹¹

The early ubiquity of flatbreads across a range of different kinds of social organisation, social complexity, and subsistence strategies relates to both the possibility

for simplicity in its manufacture, when compared to more labour-intensive 'loaves', and flexibility in its associated foodstuffs and food technologies.¹²

Other kinds of products also fall under the category of flatbread, made from a range of foodstuffs, both cereal and non-cereal.¹³ Some also do not necessarily require the use of ceramic baking technologies, such as 'ash' breads.¹⁴ The earliest examples of these kinds of flatbread, made from wild cereals (barley, einkorn and oats) and tubers (club-rash), were prepared several thousand years before the emergence of agriculture, by hunter-gatherers in the central Levant, and date to 14,500 BP.¹⁵

The variety of *kinds* encompassed within the category of flatbreads makes discussion of a common origin problematic, if not redundant, for while some share important *homologous* relations, being the product of interregional diffusion, others are merely functionally *analogous* in structure, their innovation and structural convergence resulting from similar environmental and economic factors.¹⁶ As a consequence, bread, as a general category, can have multiple centres of evolution. For example, it can be argued that it is misleading to suggest that 'bread' was only introduced into northeast Africa at the beginning of the 2nd millennium BC via contact with Pharaonic Egypt¹⁷, as evidenced through the appearance of things such as conical bread moulds.¹⁸ Some concept of bread already existed in terms of local variants, involving alternative foodstuffs and cooking techniques. Northeast Africa lay outside the land of "bread-eaters"¹⁹ only in terms of a very specific structural *kind* of bread, comprising a particular set of foodstuffs, techniques and baking technologies, usually revolving around leavened wheat-based breads and oven baking, and whose origins lay in the Near East. Such distinctions are central to the issue of studying cultural transmission in foodways. With these issues in mind, archaeology has enormous potential to trace the entangled histories or heritable continuity of such variation, especially through analysis of constituent elements such as associated food technologies, in particular ceramics, as well as archaeobotanical remains and food residues.²⁰

12 Cf. Pasqualone 2018, 10, 18; Qarooni et al. 1992.

13 Including tubers (Lyons 2016), roots (Griffin-Kremer 2014, 248), and acorns (Cuthrell 2014, 153).

14 E.g. Deacon 1984, 258; Dufton 1970, 219-220; after Lyons 2016, 966; Lyons & D'Andrea 2003, 522.

15 Recovered from the important Epipalaeolithic site of Shubayqa I, Jordan: Arranz-Otaegui et al. 2018.

16 Cf. Matthews & Nowotnick 2019, 479; for a discussion of these terms: see Kroeber 1931; Lyman 2001; Lyman et al. 1997, 8-11; O'Brien & Lyman 2000, 257-300.

17 Wengrow 2006, 173; Edwards 2003; Fuller & Rowlands 2011, 41; Haaland 2006, 336.

18 E.g. Jacques-Gordon 1981, i.e. Type C.

19 Edwards 2003, 147.

20 The discussion presented here is a part of a multi-disciplinary analysis conducted by the Connecting Foodways project, investigating early Iron Age cultural interaction and transmission in food technologies in north-central and northeast Africa, c. 1000 BC-AD 1000 (see Matthews & Nowotnick 2019; Nowotnick & Matthews 2020); the project is based at the *Deutsches Archäologisches Institut* (DAI) in Berlin, and funded by the *Deutsche Forschungsgemeinschaft* as part of the Entangled Africa project (SPP 2143).

5 Cf. Collar 2016; Heiss 2015; Lyons & D'Andrea 2008; Samuel 2002.

6 Cf. Haaland 2006; Hansson 1994; Heiss 2015.

7 Gocmen et al. 2009; Kumar 2016; Pasqualone 2018.

8 Pasqualone 2018.

9 Cf. Kumar 2016; Qarooni 1996.

10 Pasqualone 2018, 12.

11 E.g. Barnard & Erkens 2016; González Carretero et al. 2017.



Fig. 9.2 Ceramic griddle plate dating to the mid-2nd millennium AD (no. 1; c. 14th-15th century AD) from Landévennec Abbey, Finistère (France; no. 1), and reconstruction of a medieval griddle plate (no. 2). Photos: 1. A. Bardel & R. Pérennec; 2. l'Écomusée des Monts d'Arrée; both © Musée de l'ancienne abbaye de Landévennec / GIP Musées de territoires finistériens; used with permission.

In the discussion of ancient and traditional flatbread production, its technological component typically comprises a griddle plate. These techniques contrast significantly with other kinds of bread preparation,²¹ especially structurally, in that they do not require large ovens, and can instead be used over the simplest of fire installations.²² As a cooking technology, they work well with basic ingredients and pastes that utilise even the most common of cereals, as well as other plant-based foodstuffs. They are a remarkable technology, which accounts for their global and historical ubiquity.²³ As household or local communal products, the specifics of their fabric, ware, and construction methods typically reflect local environmental, technological, and historical circumstances. Despite this, global and historical similarities in technical *structure* remain. For example, the relationship between morphology, especially outline and thickness, and size serve a specific function, are therefore not without cross-cultural or inter-regional significance. Across Eurasia, their use in the past also typically reflects common cereals over modern staples, such as barley, buckwheat or sorghum.

Contemporary flatbread traditions in northeast Africa

Flatbreads are still common across northeast Africa, constituting a dietary staple. Of particular importance is the group of flatbreads made from a batter typically using non-wheat cereals, so as to produce pancake-style breads.²⁴

Often these are referred to as 'unleavened' but preparatory techniques often include steps, such as fermentation and the inclusion of alternative raising agents like old dough or fermentation liquid, that act to replicate leavening processes.²⁵

Similar kinds of pancake flatbreads are found across contemporary Europe, for example southern Dutch *poffertjes*, traditionally made with buckwheat, or in the northern provinces of Groningen and Drenthe *spekdikken*, made rye flour, as well as Breton *galette*, also made from buckwheat. These regional manifestations of flatbread variations also have considerable antiquity. For example, in the northern Netherlands, ceramic baking plates have been recovered from a number of pre-Roman and Roman Iron Age settlements in Friesland (fig. 9.1).²⁶ In northwestern France, ceramic griddle plates are known from medieval contexts, such as those discovered in the ruins of Landévennec abbey at Crozen, Finistère (fig. 9.2).²⁷ Today, however, these European pancake flatbreads rarely comprise dietary staples, being luxury or celebratory foods, due to dietary reliance on wheat-based breads.

The bread traditions of north-central and northeast Africa, many of which share similar food preparation and cooking techniques, food technologies, as well as use of indigenous African crops, are typically characterised as differing from the bread traditions found further north in

21 The functionally-general form also means that griddle plates could be used for other cooking activities, including the roasting of cereals and cooking meat, etc. (e.g. Lyons 2007, 356-357; Rodríguez Suárez & Pagán Jiménez 2008).
 22 Lyons & D'Andrea 2003, 517-521.
 23 Pasqualone 2018.
 24 Lyons 2016; Pasqualone 2018, 12.

25 Dirar 1993, 81.

26 See note 4.

27 Simon 1986. The ceramic griddle plates from Landévennec abbey have recently undergone archaeometric analysis at Laboratoire Nicolas-Garnier, by G. Ridoux (Garnier 2016; 2020, 24), and have been studied as part of the 'Quand la crêpe devient bretonne' exhibition, Musée ancienne abbaye Landévennec (<https://www.musee-abbaye-landevennec.fr/>); cf. Bardel et al. 2020; Bardel & Perennec 2020, 21-23.

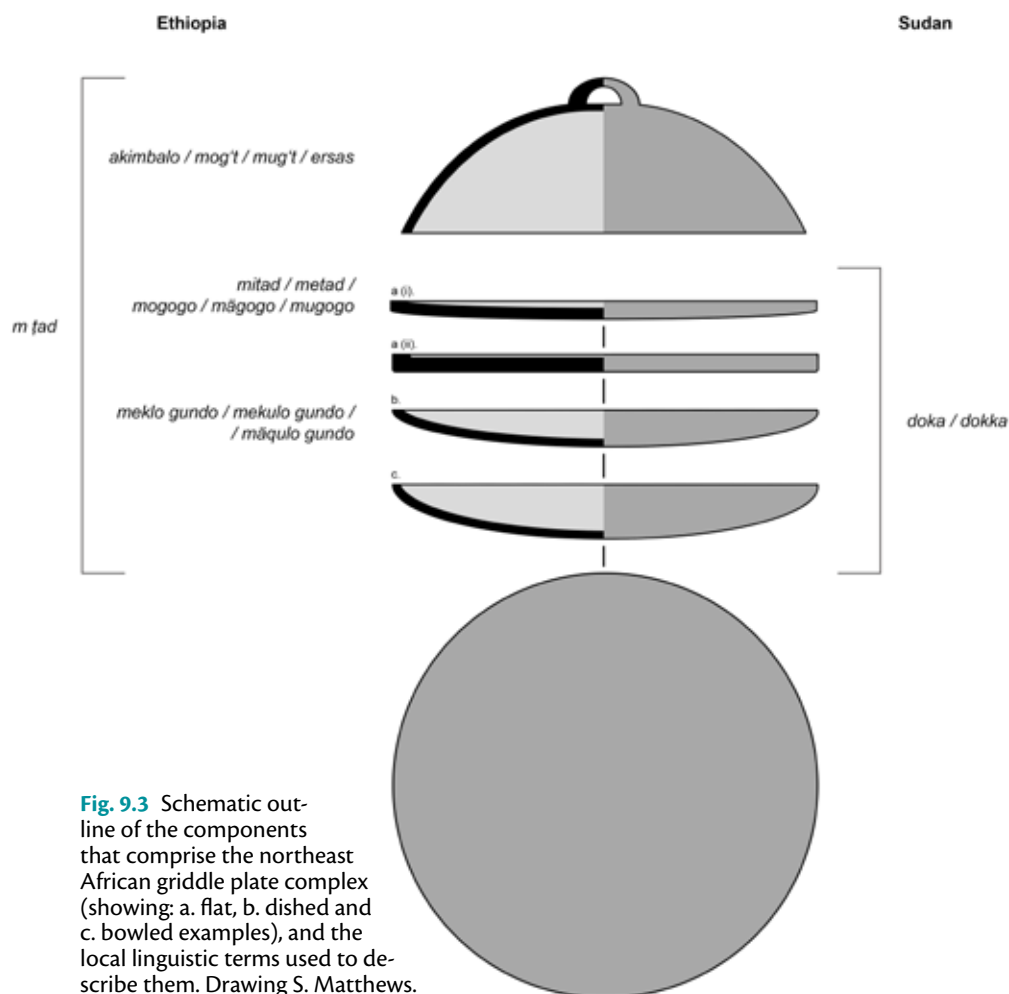


Fig. 9.3 Schematic outline of the components that comprise the northeast African griddle plate complex (showing: a. flat, b. dished and c. bowled examples), and the local linguistic terms used to describe them. Drawing S. Matthews.

Egypt. These, like those of Europe, are more typically based on Near Eastern cereals: the production of wheat-based leavened breads, and baking facilitated inside a cooking installation.²⁸ The distinction between the two is rooted in the difference between a Middle Eastern dough-based 'bread' tradition, as found in Egypt, and which dominates the bread-based traditions of Europe, and an African 'porridge' tradition, where bread production is batter-based. Northeast Africa, especially Central Sudan and the northern Ethio-Eritrean highlands, therefore constitute an important historical interaction zone between the two traditions, incorporating aspects of both.

These pancake flatbreads are typically cooked on a griddle plate (fig. 9.3), over an open or boxed fire, rather than in an oven, and usually involve the use of cereals other than wheat.²⁹ Variations are found across northeast Africa, including Sudan, Eritrea, Djibouti, Ethiopia and Somalia,³⁰ as well as adjacent parts of north-central and east Africa. In the northern Ethio-Eritrean highlands of Tigray, these flatbreads are termed *taita* or *tai'ta* (in Tigrinya) or *injera* (in Amharic),

and today are commonly made from teff.³¹ In the Sudan, these flatbreads are represented by *kissra*, prepared instead from sorghum (fig. 9.4).³² In central Chad, similar flatbreads are known, also called *kissra* or *kisra*, produced from sorghum or millet,³³ and in Somalia they are called *anjero*, made from sorghum or maize.³⁴

The preparation and cooking techniques utilised in the production of Sudanese *kissra* and Ethiopian *taita* are largely similar,³⁵ and this includes related flatbreads, such as Sudanese *gurassa*.³⁶ Despite the use of different base African cereals, there is considerable similarity in the preparation of the paste and flour, food technologies, and cooking techniques. These similarities in *structure*, re-ordered or varying according to regional and cultural circumstances and local foodstuff requirements, suggest a shared history.³⁷ The regional difference in basic foodstuffs, such as the use of teff in northern Ethiopia and sorghum in Sudan, as well as linguistic differences in the labelling of both food products and associated technologies (see fig. 9.3), are frequently

mobilised as historical and cultural expressions of regional identity,³⁸ despite the fact that both are neither as exclusive or stable as commonly perceived.

For example, in Sudan some variations on *kissra* have quite recent historical roots, obscuring more ancient common connections.³⁹ Traditional *kissra*, termed *kissrat-kass*, is mentioned in writings of the 17th century AD but the extremely thin variant, *kissrat-gergeriba*, seems only to have developed in northern Sudan or southern Egypt after the 18th century, during the period of Turkish-Egyptian occupation.⁴⁰ More recent migrations within northeast Africa, and in particular demographic changes between rural parts and urban centres, as well as ethnographic interests, have only further obscured underlying structural relations. However, griddle plates are a common feature

28 Haaland 2006; 2007.

29 Pasqualone 2018, 12.

30 Pasqualone 2018, 12.

31 Dirar 1993; Lyons 2016, 965, 968-970; Lyons & D'Andrea 2003, 519; Parker et al. 1989.

32 Dirar 1993, 169-176.

33 Zuchora-Walske 2009, 53.

34 Pasqualone 2018, 12.

35 Cf. Dirar 1993, 74-76, 169-170, 173-174, 211-214; Parker et al. 1989, 94.

36 Dirar 1993, 222-223.

37 Dirar 1993, 212.

38 Cf. Dirar 1993, 168; Lyons 2007, 349-350; Wilding 1989, 311.

39 E.g. Dirar 1993, 12-20, 52, 55-63, 169-171, 211.

40 Dirar 1993, 170-171.



Fig. 9.4 The production of sorghum-based pancake-style flatbread, cooked on a modern metal griddle plate in an outdoor kitchen, in a house in the modern village of Hamadab, Sudan. Photo U. Nowotnick.

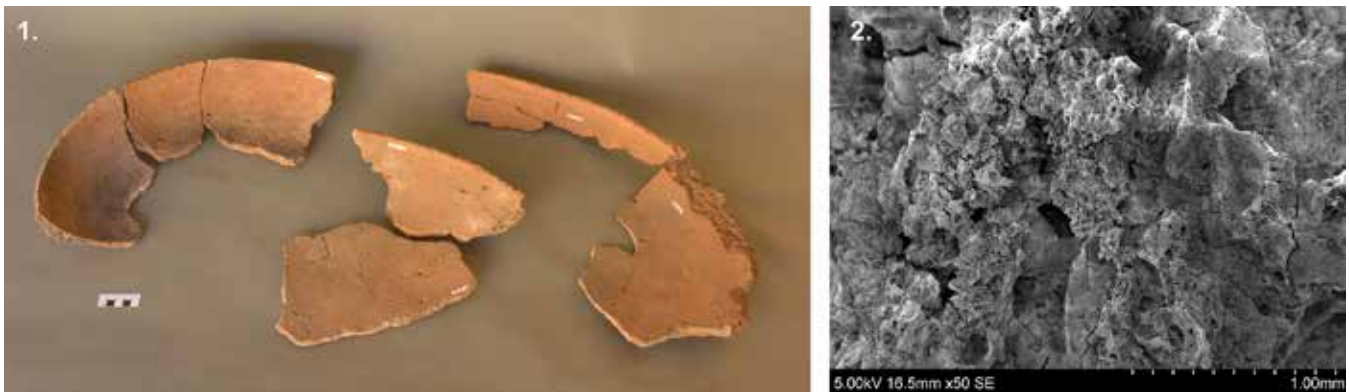


Fig. 9.5 Evidence of griddle cuisine from houses of the late Kushite kingdom settlement of Hamadab, Central Sudan: ceramic griddle plates dating to the early to mid- 1st millennium AD (no. 1), and scanning electron microscope image of sorghum-based flatbread remains (no. 2). Photos: 1. S. Matthews; 2. L. Gonzalez Carretero.

of historical sites, predating many of the modern linguistic labels that currently define them, not only in southern Egypt and northern Sudan, such as those from medieval contexts at Arminna West, but also from further south in Central Sudan, and from medieval contexts such as at Soba East.⁴¹ In a recent discussion of the origin of griddle plates recovered from mid-2nd millennium AD sites along the western ranges of the Ethio-Eritrean highlands, they have been described as a “foreign element” which developed in ‘Nubia’ (northern Sudan) and which spread throughout Sudan during this period, arriving in western Ethiopia by means of fleeing Christian refugees.⁴²

It is clear, however, that these flatbread traditions have a much deeper technological history. For example, in Sudan similar griddle plates, including flat, dished and shallow-bowled variants (fig. 9.5, no. 1), have been recovered in some quantity from early 1st millennium AD houses belonging to the late period of the Kushite kingdom, from the walled urban settlement of Hamadab, located on the Nile near Meroe.⁴³ Analysis of archaeobotanical remains and food residues from the site also revealed the charred remains of flatbread made from domesticated sorghum (fig. 9.5, no. 2), as well as residues of sorghum-based porridge, from related domestic and food-preparation areas.⁴⁴

41 Weeks 1967, fig. 31 (Arminna West); Welsby & Daniels 1991, 179, fig. 96 (Soba East).

42 González-Ruibal 2021, 538, fig. 5; González-Ruibal & Falquina 2017, 187, 198.

43 Nowotnick, forthcoming a, pl. 52.

44 Fuller & Gonzales Carretero 2018, 115-116, fig. 4, C.

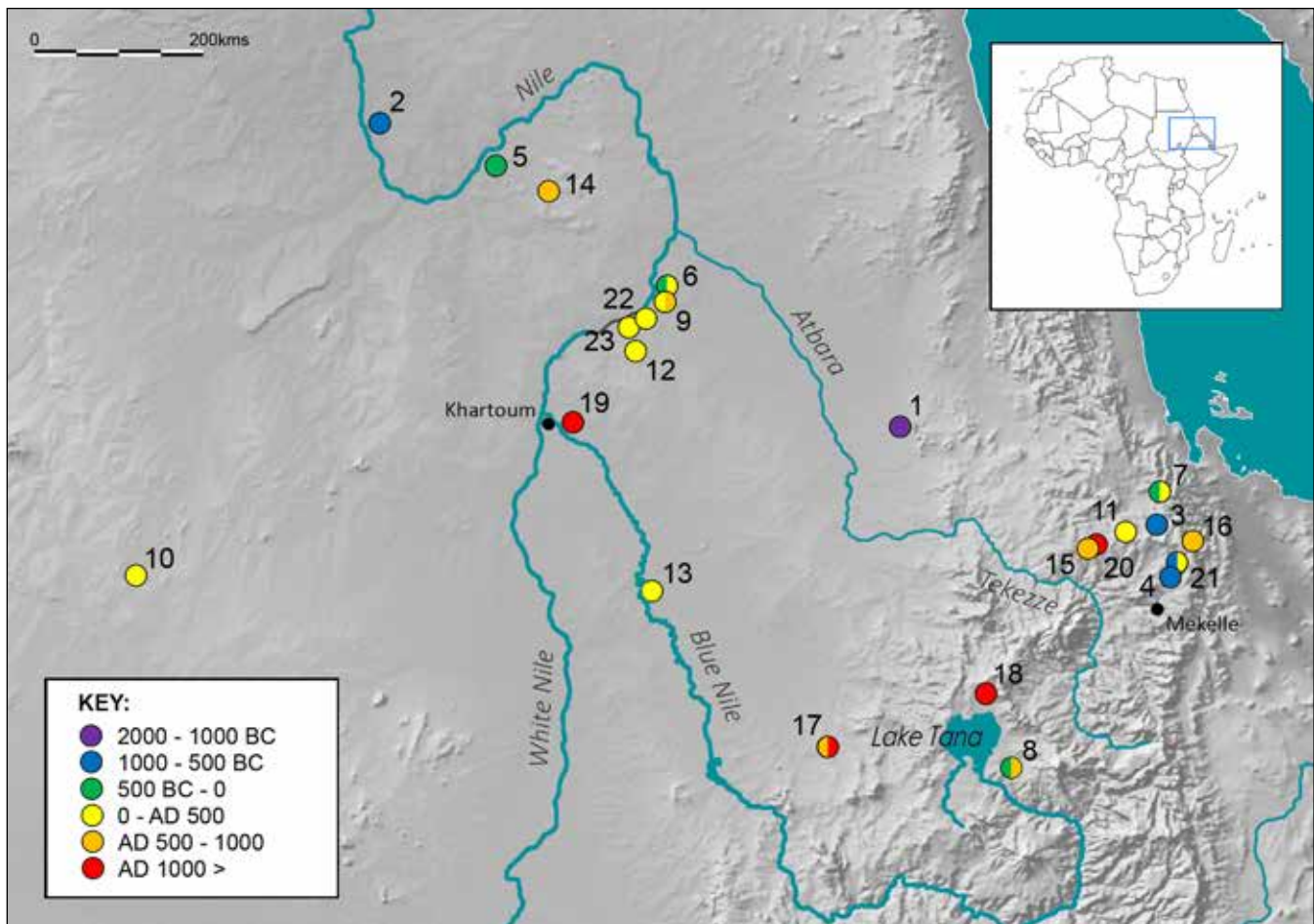


Fig. 9.6 Distribution map of griddle plates recovered from sites in Sudan and the Ethio-Eritrean highlands as discussed in the text (date ranges express that of find contexts rather than that of overall site duration). 2000-1000 BC: 1. Mahal Teglinos; 1000-500 BC: 2. Kawa; 3. Mezber; 4. Ziban Adi; likely in this date range: 21. Gud Bahri; 500 BC-0: 5. Nuri; 6. Meroe; 7. Matara; 8. Lalibela and Natchabiet caves. 0-AD 500: 6. Meroe; 7. Matara; 9. Hamadab; 10. Zankor; 11. Beta Samati; 12. Musawwaret; 13. Abu Geili; likely in this date range: 21. Gud Bahri; 22. Muweis; 23. El-Hassa; AD 500-1000: 8. Lalibela and Natchabiet caves; 9. Hamadab; 14. Tuweina; 15. Kidane Mehret; 16. Wakarida and Sebdera region; 17. Jebel Gerara. AD 1000 onwards: 17. Jebel Gerara; 18. Gännätä Iyasus; 19. Soba East; 20. Seglamon. Map S. Matthews.

9.3 Connecting cuisines: The archaeology of griddle gastronomy

Contemporary food practices in northeast Africa, as an important interaction zone between African and Near Eastern bread cultures,⁴⁵ hold an undeniable fascination for archaeologists working in the region, resulting in a range of viewpoints on the origin of local flatbread traditions. This attests to the power of both foodways and bread cultures in the popular imagination.

The seminal works by Diane Lyons and A. Catherine D'Andrea on griddle cuisine foodstuffs and food technologies, especially bread traditions, in northeast Africa and in particular the Ethio-Eritrean highlands, remain authoritative studies, and there is little that can be added to their far-reaching archaeological, ethnoarchaeological and ethnographic observations.⁴⁶ On the basis of these studies, Lyons and D'Andrea conclude that the development of griddle plates in northeast Africa is directly related to the use and

domestication of African cereals.⁴⁷ However, recent finds of griddle plates from the region raise some further points of interest in respect of the possible transmission of griddle cuisine technology in northeast Africa. These provide some additional information on the possible centres of adoption and adaptation – as opposed to diffusion from a single centre – as a consequence of the connectivity and shared food histories of the region.

The long history of flatbread traditions in northeast Africa can be measured through study of these ceramic griddle plates, as integral components of this culinary tradition.⁴⁸ Our review of the early griddle plates of northeast Africa is based on its division into three main regions: Central Sudan, focusing primarily on the Nile Valley region that lies south of the 3rd cataract; Eastern Sudan, an important region that lies between the Atbara and Gash rivers; and the Ethio-Eritrean highlands of Tigray. These areas represent an important region of ancient economic and cultural interaction, and comprise the main areas of modern-day

⁴⁵ Haaland 2006; 2007; 2012.

⁴⁶ Lyons 2007; 2016; Lyons & D'Andrea 2003; 2008.

⁴⁷ Lyons & D'Andrea 2003, 526.

⁴⁸ Cf. Lyons 2007, 347; Lyons & D'Andrea 2003, 515.

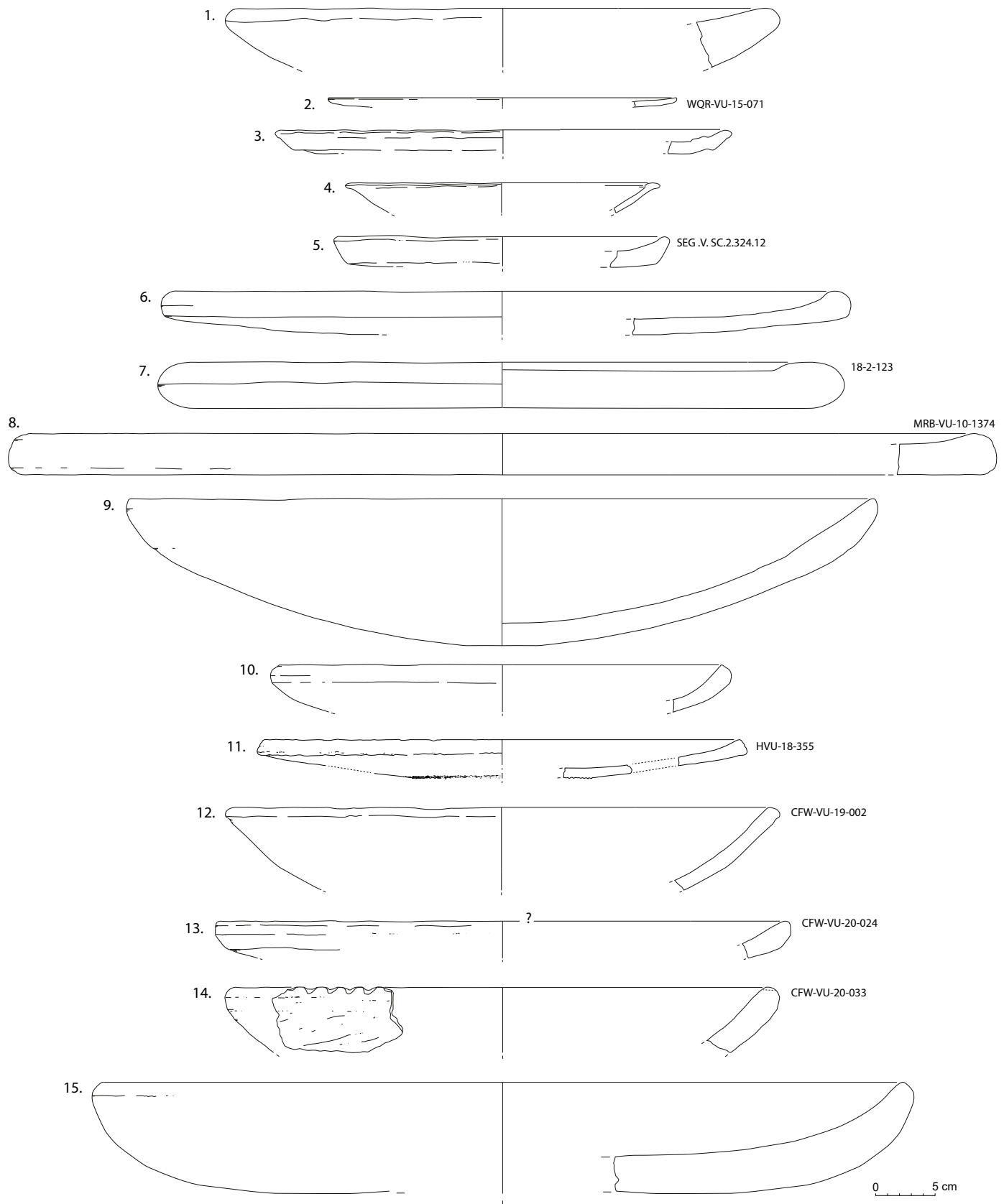


Fig. 9.7 Examples of ceramic griddle plates from northeast Africa: 1. Mahal Teglinos; 2. Ziban Adi; 3. Kidane Mehret; 4. Maleke, Aksum; 5. Seglamon; 6. Gännätä Iyasus; 7. Nuri; 8. Royal City, Meroe (western wall); 9. Royal City, Meroe; 10. Royal City, Meroe (building M712); 11. Hamadab; 12. Small Enclosure, Musawwarat; 13. El-Tuweina; 14. Abu Geili; 15. Soba East. Original drawings: 1. Manzo 2017, fig. 32; 2. S. Büchner/DAI Wuqro project (2009-2015); 3. Phillips 2000a, fig. 273, h; 4. Phillips 2000b, fig. 340, f; 5. Gaudiello 2014, fig. IV.3; 6. Torres Rodríguez 2017, fig. 19, 3; 7. Dunham 1955, fig. 195, no. 123; 8. Nowotnick 2018, fig. 17/DAI Meroe Royal Bath project; 9. Shinnie & Bradley 1980, fig. 42, form 137; 10. Grzymski 2003, fig. 21, no. P90; 11. Drawing: U. Nowotnick/DAI Hamadab project; 12. Drawing: U. Nowotnick/Archaeological Mission to Musawwarat; 13. Drawing: U. Nowotnick/Wadi Abu Dom Investigations; 14. S. Büchner/DAI Connecting Foodways project; 15. Welsby & Daniels 1991, fig. 96, no. 10; used with permission. Drawings S. Büchner.

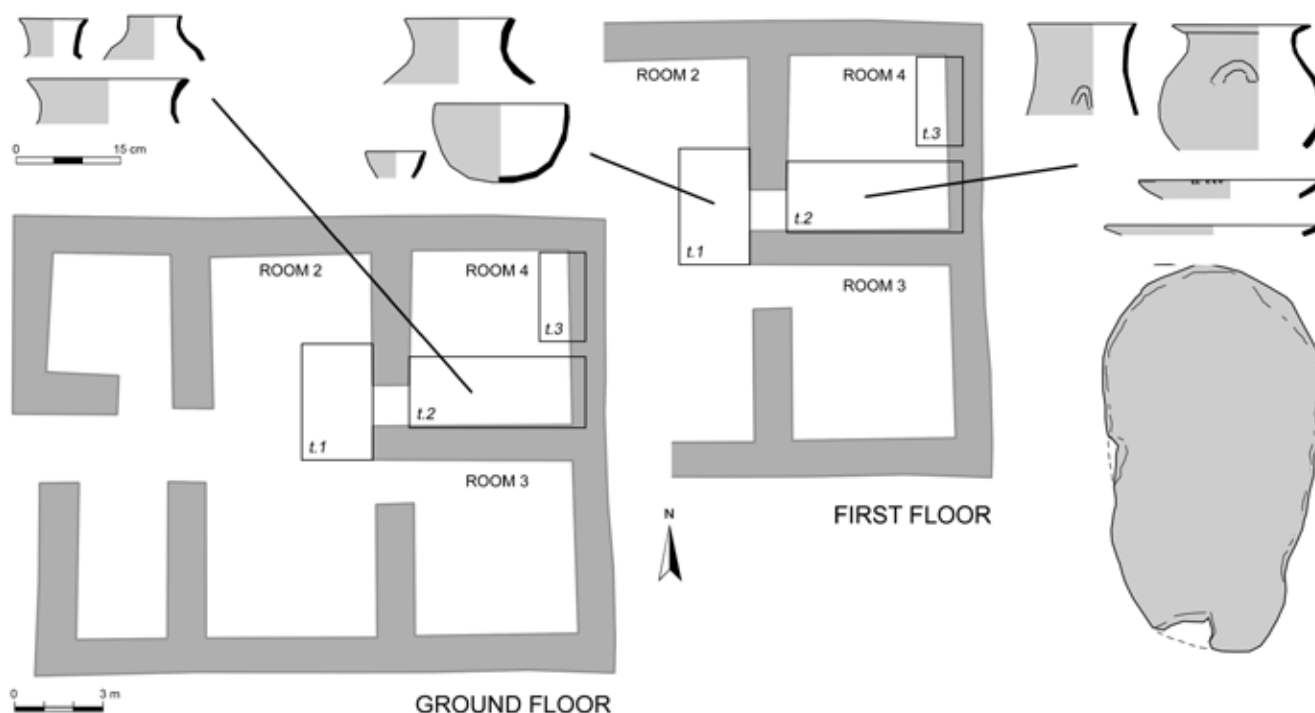


Fig. 9.8 Schematic plan of the main building from the pre-Aksumite town of Ziban Adi, near Wuqro, Tigray, Ethiopia, showing a selection of cooking vessels, including griddle plates, relative to room and floor in trench 1 (t.1) and trench 2 (t.2). Drawing S. Matthews.

griddle cuisine. We will briefly discuss each region in turn, reviewing the current and new evidence for griddle plates. We start with the earliest known example from Eastern Sudan, dated to the late 3rd-early 2nd millennium BC, and continue our discussion through to the medieval period. In Sudan this comprises the time of the Kushite kingdom and its subsequent medieval Nubian kingdoms;⁴⁹ and in Tigray, of the Aksumite kingdom, its progenitor in the proto-Aksumite polity, as well as the earlier pre-Aksumite 'Highland Ona' cultural complex.⁵⁰ The distribution of the sites discussed below is shown in figure 9.6, and examples of these northeast African griddle plates are illustrated in figure 9.7.

Eastern Sudan

Eastern Sudan is a much underexplored region but thanks to the herculean efforts of the University of Naples 'L'Orientale' and the Italian Archaeological Expedition over the last forty years, our knowledge is sufficient to understand the important role the region played in connecting much of northeast Africa, as well as neighbouring regions to the north and the Red Sea, from at least the 4th millennium BC.⁵¹ Most of the archaeological investigation of the region has taken the form of extensive field surveys, revealing a range of sites, with changing chronological distributions of settlement. Excavation, however, has been small-scale, with detailed investigation largely concentrated on a single site: Mahal Teglinos, located close to the Gash river, in the region where the Gash lies closest to the river Atbara. However, this site alone has revealed remarkable

evidence for large-scale cultural interaction across northeast Africa, as well as some of the most important evidence concerning early foodways in the region.

This includes the earliest known example of a ceramic griddle plate in northeast Africa.⁵² The griddle plate (fig. 9.7, no. 1) was recovered from a food-preparation area, possibly of ritual function, and dates to the end of the 3rd millennium BC.⁵³ Several centuries later (c. 1700 BC), from structures located elsewhere on the site, similar or related ceramic vessels – with a pedestal base, perhaps functioning as serving rather than cooking plates – were also found.⁵⁴

Ethio-Eritrean highlands

Despite the extraordinarily early date for griddle plate use in Eastern Sudan, the earliest known specimens in the neighbouring highlands of Ethiopia and Eritrea, from the cave of Lalibela, near Lake Tana, were dated to the latter half of the 1st millennium BC.⁵⁵ However, over the last decade, the dates for early griddle plates in northern Ethiopia have begun to be pushed back, at least to the beginning of the 1st millennium BC, if not earlier, on the basis of new finds from settlement sites belonging to the pre-Aksumite 'Highland Ona' cultural complex.⁵⁶

From the small pre-Aksumite town of Ziban Adi, south of Wuqro, a likely kitchen context within a large two-storey domestic building (fig. 9.8) has provided evidence for a

49 Welsby 1996; 2002.

50 Phillipson 2012.

51 Summarised in Manzo 2017a.

52 Manzo 2017a, 38, fig. 32.

53 Manzo 2017a, 43, note 7; 2017b, 104, fig. 9.

54 Manzo 2017a, 47, fig. 42.

55 Dombrowski 1971, 130.

56 Benoist et al. 2020a, 20, note 2.

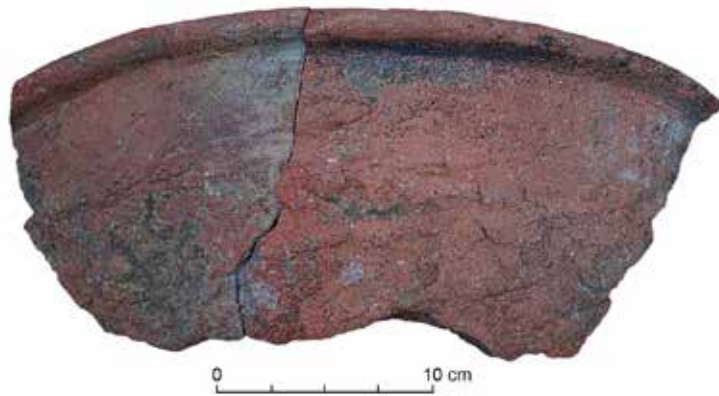


Fig. 9.9 A large griddle plate from the late Aksumite (c. 7-9th century AD) site of Sebdera, near Wolwalo, Tigray, Ethiopia. Photo T. Sagory; used with the permission of the Mission archéologique française dans le Tigray oriental.

range of food technologies, including large grinding stones, as well as cooking vessels, such as bowls and globular vessels, and a notable assemblage of griddle plates, including bowled, dished and flat variants (fig. 9.7, no. 2).⁵⁷ Dished and bowled griddle plates, as well as ovens, belonging to the pre-Aksumite period, have also been found at the important site of Mezber.⁵⁸ At Matara, on the edge of the Tigrayan highlands of southern Eritrea, two large bowl-shaped griddles were found beneath the later Aksumite-period basilica (site B), which date to the latter half of the 1st millennium BC.⁵⁹ Possible pre-Aksumite griddle plates may also occur at the site of Gud Bahri, also near Wuqro.⁶⁰

It is noticeable that these examples cluster amongst the eastern distribution of sites belonging to the pre-Aksumite cultural complex. At present, no definite examples from domestic sites further west are known.⁶¹ This absence is surprising, given that pottery belonging to the Gash and Jebel Mokram groups of Eastern Sudan,⁶² associated with the early griddle plates mentioned above, have been found in late 2nd millennium BC contexts at a number of western pre-Aksumite sites.

The griddle plates from the late 1st millennium BC deposits at the cave site of Lalibela, located further to the south near Lake Turkana,⁶³ seem to owe more to the newly emerging proto-Aksumite polity that was developing around Aksum,⁶⁴ than to late pre-Aksumite 'Highland Ona' traditions, judging by descriptions of the pottery. The griddle plates, however, are noted as being poorly represented in these early levels,⁶⁵ and unfortunately have never been published.

Whilst new finds have increased our knowledge of pre-Aksumite griddle plates, including the extent to which degrees of form-variation were already present in the early 1st millennium BC, the observation that griddle plates only became common during the 1st millennium AD, in particular during the classic or Middle Aksumite phase,⁶⁶ still seems to hold true, given that they appear more frequently on sites of the 1st millennium AD. New examples include a griddle plate dating to the Middle Aksumite phase (c. 380-580 AD), recovered from possible domestic structures in the Aksumite town of Beta Samati.⁶⁷ It is notable that similar cooking vessels were not recovered from the nearby high-status basilica, possibly reflecting status-based food preferences. A number of examples have been recovered from sites around Aksum, the capital of the 1st millennium AD Aksumite kingdom in northern Ethiopia. At Kidane Mehret a griddle plate (fig. 9.7, no. 3) was recovered from a likely late Aksumite kitchen context.⁶⁸ A further late Aksumite example (fig. 9.7, no. 4) has come from Maleke.⁶⁹ Despite the extensive Aksumite-period structures investigated at Matara, relatively few cooking vessels were recovered, probably reflecting the emphasis upon elite parts of this sprawling urban complex (i.e. sites A, B, C, D and E1), while the non-elite, possibly domestic area of E2 remains largely unpublished.⁷⁰ From the Aksumite period remains thus far published, there is only one single bowl-shaped vessel, which resembles forms associated with griddle plates, and this was recovered from a burial chamber.⁷¹ A number of new examples have also come from late- and post-Aksumite sites in northeast Tigray, in the region of Wakarida and Wolwalo, thanks to important new work in the region. These include a large griddle plate (fig. 9.9) which was recovered from the late- or post-Aksumite (c. 7-9th century AD) site of Sebdera, in the Wolwalo region.⁷² To the south, late-Aksumite and post-Aksumite (late 1st and 2nd millennium AD) examples of griddle plates are known at Natchabiet and Lalibela caves.⁷³ Finally, griddle plates were apparently also recovered from Gud Bahri, near Wuqro, which contains a large Aksumite-period building.⁷⁴ Further post-Aksumite griddle plates have been found northeast of Aksum at Seglamon (fig. 9.7, no. 5), at Gännätä Iyasus near Lake Turkana (fig. 9.7, no. 6), and to the west at Jebel Gerara.⁷⁵

57 Matthews & Büchner 2016; forthcoming.

58 D'Andrea et al. 2018; pers. comm. A.C. D'Andrea (Simon Fraser University, Burnaby).

59 Anfray 1966, 14-15, pl. XIX, nos JE 3351 and JE 3350.

60 Pers. comm. H. Berhe (Mekelle University, Mekelle).

61 E.g. Kidane Mehret: Phillipson 2000; Phillips 2000a; Mai Adrasha: Moy 2019; Seglamon: Gaudiello 2014, 98.

62 Cf. Manzo 2017a, 33-54.

63 Dombrowski 1971.

64 Cf. Bard et al. 1997.

65 Dombrowski 1971, 130, fig. 35 (type IVa).

66 Lyons & D'Andrea 2003, 522.

67 Harrower et al. 2019, 1541, fig. 2.

68 Phillips 2000a, 317, fig. 273.h.

69 Phillips 2000b, 389, fig. 340.f.

70 Anfray 1966; 2012, 24, fig. 6.E2.

71 Anfray 1967, 38-39, pl. XXXVII (no. 3278).

72 Benoist 2019, fig. 29; Benoist et al. 2020b.

73 Dombrowski 1971, 130, figs. 21.D and 30.E.

74 Pers. comm. H. Berhe (Mekelle University, Mekelle); for discussion of the site, see Berhe et al. 2020.

75 Gaudiello 2014, 97-98, fig. IV.3; Ricci & Fattovich 1987 (Seglamon); De Torres Rodríguez 2017, 240, fig. 19, nos. 3-6 (Gännätä Iyasus); González-Ruibal 2021, 538, fig. 5.B (Jebel Gerara).

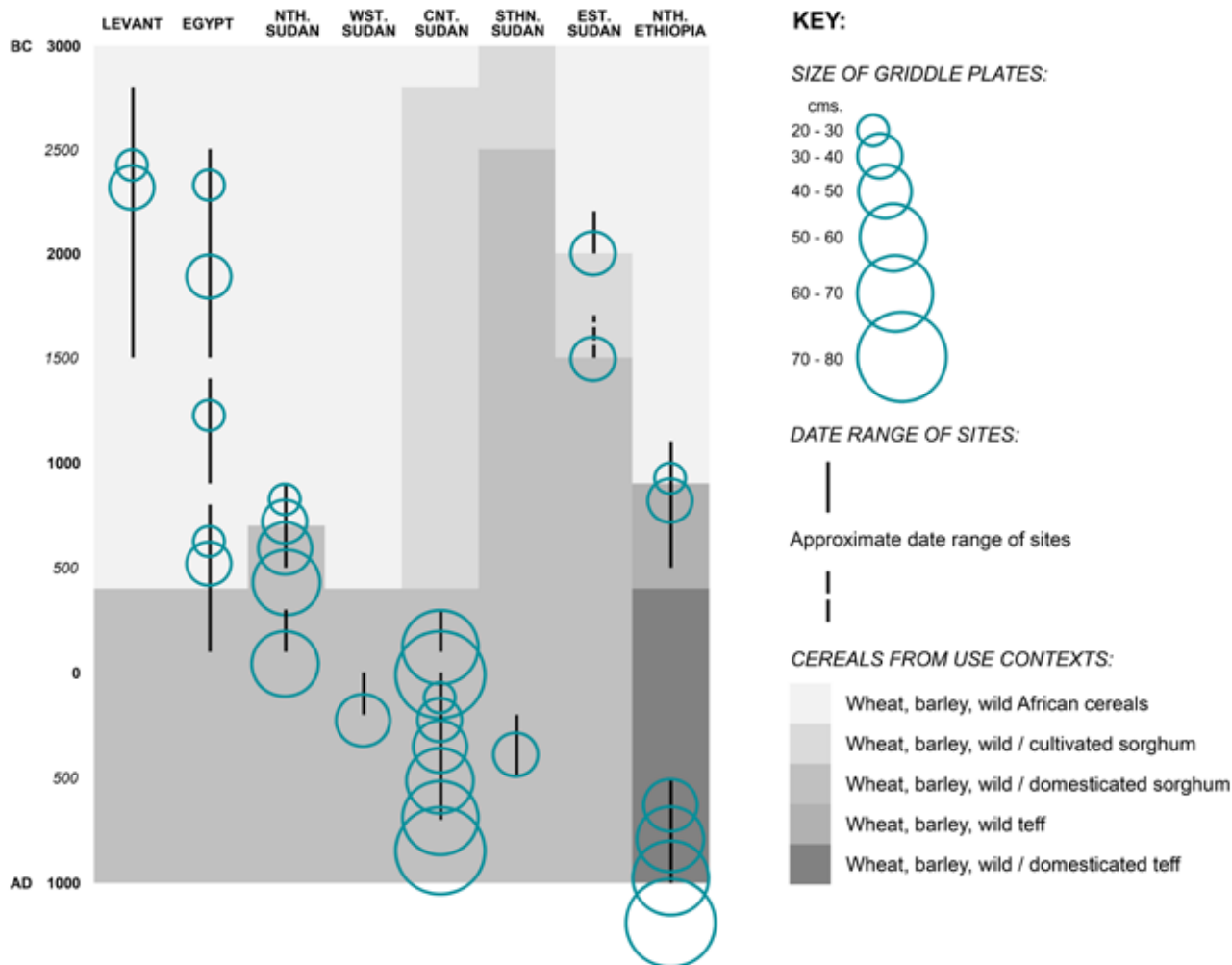


Fig. 9.10 Comparative chronology for 1) the changing content of cereal complexes (based on botanical remains from use-contexts) relative to 2) the occurrence and size of ceramic baking plates (including bread trays, bread platters and griddle plates), across the Near East and northeast Africa, c. 3000 BC-AD 1000. Drawing S. Matthews.

Central Sudan

In Central Sudan, the earliest griddle plates have come from early Kushite-kingdom contexts, dating from the early to mid-1st millennium BC. In northern Sudan, at the large urban complex of Kawa, bread moulds and bread trays of Pharaonic Egyptian pattern have been found, as well as so-called 'baking platters' similar to griddle plates; these are from domestic contexts, dating to the first half of the 1st millennium BC.⁷⁶ A little further down the Nile, upstream from the 4th cataract, a baking platter or griddle plate (fig. 9.7, no. 7) was found amongst the construction material used in the building of an early-Kushite-period royal tomb at Nuri, dating to the late 4th century BC.⁷⁷ Contemporary with this, in the area of what would later become the Royal City of Meroe, further examples (e.g. fig. 9.7, no. 8), contemporary with more typical Pharaonic Egyptian breads moulds and bread trays, griddle plates were recovered from a late construction horizon of the area of the so-called Royal Baths at Meroe.⁷⁸

Later examples have also been recovered from later Kushite-period settlements (late 1st millennium BC to early 1st millennium AD), including from domestic buildings in the Royal City at Meroe (fig. 9.7, nos. 9 and 10).⁷⁹ Contemporary with these are those from settlements located near the Nile, including Muweis and el-Hassa, as well as the town of Hamadab (fig. 9.7, no. 11), where the charred remains of flatbread made from sorghum (fig. 9.5, 2) were recovered from the kitchen of a domestic structure.⁸⁰ In the desert hinterlands to the east, bowled examples (fig. 9.7, no. 12) have come from the Small Enclosure, an elite residence located next to the Kushite palace complex of Musawwarat.⁸¹ A number of examples have also come from sites located on the margins of the late-Kushite state. In the

79 Shinnie & Bradley 1980, fig. 42, form 137; Grzymski 2003, 61, fig. 21, no. P.90.

80 Pers. comm. A. Benoist (Université Lyon, Lyon) (Muweis; for discussion of the site, see Maillot 2016); pers. comm. R. David (Section Française de la Direction des Antiquités du Soudan, Khartoum) (el-Hassa); Nowotnick, forthcoming a, pl. 48; Wolf et al. 2014, 723-728 (Hamadab).

81 Identified through recent work by the Connecting Foodways project; Fitzenreiter et al. 1999.

76 Pers. comm. I. Sjöström (Sudan Archaeological Research Society, London).

77 Dunham 1955, 250-252 (tomb no. 56), fig. 195, no. 123.

78 Nowotnick 2018, 217-217, fig. 17.



north, the remains of a bowled variant (fig. 9.7, no. 13) came from the settlement of El Tuweina, located in the Bayuda desert.⁸² In the south, on the Blue Nile, a further bowled example (e.g. fig. 9.7, no. 14) has been recognised amongst the ceramics from the settlement at Abu Geili.⁸³ To the southwest in Kordofan, the remains of a similar example have come from the enclosed settlement at Zankor.⁸⁴

Griddle plates have also been recovered from later post-Kushite-kingdom contexts at Hamadab (fig. 9.5, no. 1), and a number of medieval sites, including Soba East (fig. 9.7, no. 15), near the confluence of the Blue and White Nile.⁸⁵

9.4 Sahelian cereals, elevated *eragrostis* and barley breads

Discussion of the 'origins' of griddle plates in northeast Africa has become inextricably linked to the study of the timing for the domestication of African cereals, especially sorghum and teff, with which contemporary griddle plates are closely associated; their chronological and spatial range, relative to the distribution of griddle plates across the region (fig. 9.10), is therefore significant in understanding their development.

Sorghum in Sudan

The search for the earliest domesticated sorghum in northeast Africa has revealed a complex and protracted evolutionary process, combining common use of Near Eastern cereals, wild African cereals, especially sorghum and millet, and the development of cultivated strains of sorghum.⁸⁶ Egypt and northern Sudan were orientated toward the use of Near Eastern crops, specifically wheat and barley,⁸⁷ which had diffused to Egypt by the mid-5th millennium BC, to northern Sudan by the early 3rd millennium BC, and to the northern Ethio-Eritrean highlands in the late 2nd millennium BC.⁸⁸ These crops are heavily reliant on winter cultivation, which becomes more problematic – though far from impossible – further south, where winters are both extremely short and mild.⁸⁹

The earliest dated examples of this process of domestication are predominantly located south of Central Sudan, in an arc beginning south of the confluence of the Blue and White Nile and running into Eastern Sudan, skirting the limits of the eastern Sahel and the northern Ethiopian highlands.⁹⁰ Analysis of seed impressions on pottery from Eastern Sudan has provided evidence for the cultivation of wild sorghum, precipitating its morphological transition toward its modern domesticated structure, already during the (early) 3rd

millennium BC;⁹¹ similar evidence suggests more fully domesticated exploitation from the early 2nd millennium BC,⁹² reflecting a long process of domestication.⁹³

Domesticated sorghum only appears to become *widely* adopted in Sudan in the late 1st millennium BC, during the later (Meroitic) period of the Kushite kingdom, with the incorporation and adoption of foodways long-established in the southern reaches of the Middle Nile valley (i.e. between the Island of Meroe and the Blue Nile), where the cultivation of wild and early morphological domesticated sorghum was already prevalent.⁹⁴ This included its incorporation as part of commensurate, symbolic and ritual practices.⁹⁵ However, an earlier occurrence of domesticated sorghum use comes from northern Sudan, at the site of Kawa.⁹⁶ These remains are dated to the 7th century BC, when the early Kushite kingdom was already developing links with southern Central Sudan. This is evident from the southward transmission of northern pottery traditions to Meroe,⁹⁷ which would become the centre of the later Kushite state, and beyond. However, these sorghum remains are still some several centuries later than the baking platters recovered from the site. Despite the early dates for the beginnings of a process leading to the domestication of sorghum in Sudan, they do not match either the distribution nor early dating for griddle plates in Central and Eastern Sudan (see fig. 9.10).

Teff in Tigray

Whilst the search for sorghum has been successful in pushing back the date for its domestication, as well as cultivation and use in Sudan, the study of teff has fared less well. There remains a dearth of completed or published archaeobotanical analysis from the Ethio-Eritrean highlands.⁹⁸

Discussion of the cereal history of the region remains largely reliant on the important archaeobotanical analysis conducted by Boardman on the domestic structures at Kidane Meheret, near Aksum.⁹⁹ From the 1st millennium BC levels (c. 800–400 BC), African cereals were poorly represented, and instead dominated by the occurrence of Near Eastern crops, especially barley.¹⁰⁰ The occurrence of teff in these pre-Aksomite levels was often emphasised,¹⁰¹ due to its significance in suggesting earlier domestication in the highlands. However, these seem to derive from disturbed and problematic contexts

82 Eigner & Karberg 2013.

83 Identified through recent work by the Connecting Foodways project; Crawford & Addison 1951.

84 Ishag 2016, app. no. 346; Gratien 2013.

85 Welsby & Daniels 1991, fig. 96, no. 10.

86 Winchell et al. 2017; 2018.

87 Out et al. 2016; Madella et al. 2014.

88 Fuller & Hildebrand 2013, 517.

89 Winchell et al. 2018, 486.

90 Winchell et al. 2017, fig. 1; 2018, fig. 2.

91 Winchell et al. 2017.

92 Beldados & Costantini 2011.

93 Cf. Edwards 1996, 67; Fuller 2007; Winchell et al. 2018, 485.

94 Cf. Winchell et al. 2017; 2018.

95 Edwards 1996.

96 Fuller 2004.

97 E.g. Nowotnick 2018.

98 Soil samples collected from excavations at Ziban Adi (see Matthews & Büchner 2016) remain to be analysed, as do those from excavations at Wakarida (pers. comm. A. Benosit, Université Lyon, Lyon). It is hoped that these will be completed in collaboration with the Connecting Foodways project, in conjunction with organic-residue analysis on associated cooking vessels.

99 Boardman 2000.

100 Boardman 2000, 363–365, fig. 322.

101 E.g. Bard et al. 2000; Boardman 1999; Lyons & D'Andrea 2003, 516.



and should be ignored, whilst the presence of wild teff should be treated with caution.¹⁰² For the late Aksumite levels, dated to the 6th-7th century AD, Near Eastern and African cereals, including both domesticated sorghum and teff, are present, with teff occurring more frequently than barley, though with no concomitant decline in the relative frequency of Near Eastern cereals.¹⁰³ However, again the entire assemblage may suffer from modern disturbance.

The archaeobotanical remains from the late pre-Aksumite levels (IA-IC) at the cave of Lalibela, comprising the last half of the 1st millennium BC, contained barley but not teff, with the latter attested only in later post-Aksumite levels (IIB), dated to the early 2nd millennium AD.¹⁰⁴ At the site of Ona Nagest on Bieta Giyorgis, near Aksum, teff cultivation is attested in the Middle Aksumite phase, c. AD 400-700 (and perhaps also the early Aksumite phase, c. 50 BC-AD 400). By contrast, Near Eastern crops such as barley were already grown during the late pre-Aksumite phase (c. 400 BC), contemporary with the rise of the proto-Aksumite polity in the region.¹⁰⁵

Given the lack of unequivocal evidence for domesticated teff or even wild teff use in the early 1st millennium BC, relative to the early finds of griddle plates in northern Ethiopia (see fig. 9.10) such as those from Ziban Adi and Mezber, it is difficult to maintain the argument made by Lyon and D'Andrea that an indigenous tradition of griddle-based cuisine developed in northeast Africa in conjunction with the domestication of African cereal.¹⁰⁶ As a consequence, we must either accept that the latter suffer from preservation biases in the archaeological record for the 2nd and 1st millennium BC,¹⁰⁷ or begin to develop the notion that griddle-based culinary practices were part of pre-existing Near Eastern crop use in northeast Africa, and were secondarily adapted for use with African crops.

If not African cereals, then what? Barley breads and northern connections

It is clear that the relative frequency of griddle plates from across northeast Africa increases, both in occurrence and size, with the domestication of African cereals, especially from the beginning of the 1st millennium AD onwards (fig. 9.10). Earlier bias in selection of the kind of site investigated in these regions – tending toward monumental, elite, ritual and sepulchral sites – has probably played a significant part in obscuring the degree to which griddle plate use was already common during the 2nd millennium BC, which is perhaps not reflected in the otherwise small number of finds from this period described above. However, it is evident that there was an early appearance of griddle plates in the region prior to the domestication of the African cereals – teff and

sorghum – with which their use is associated today.

If we are to maintain the assumption that griddle plate use and flatbread production are generally related, then it is pertinent to ask: if not domesticated African crops, then what? Wild cereals of African derivation, including sorghum and teff, are certainly a possibility.¹⁰⁸ However, the use of Near Eastern cereals in griddle cuisines must also be given serious consideration, especially of barley. Barley is common in most archaeobotanical assemblages from northeast Africa. It is the dominant cereal in the Ethio-Eritrean highlands during the 1st millennium BC, remains common even after the adoption of domesticated teff during the 1st millennium AD,¹⁰⁹ and is still a staple crop in both regions today, with the preparation of barley-based foods involving the same griddle technologies as for teff and sorghum.¹¹⁰

Despite the strong emphasis on griddle technologies and cuisines as a local northeast African development, similar food technologies are also to be found further north, in Egypt and the Levant.¹¹¹ Typically the bread traditions of these areas are characterised by the use of wheat, in conjunction with cup- or conical-shaped bread moulds and bread trays, in association with enclosed oven installations.¹¹² Moreover, the cooking of flatbreads in these regions is further characterised by the use of specific kinds of ovens in which they are baked.¹¹³

However, handmade, coarse ware griddle plates or 'baking plates' are also known from the Levant during the early 3rd millennium BC, having developed alongside other, oven-based bread technologies.¹¹⁴ This is also commensurate with the common use of barley as a staple foodstuff, before it was replaced by wheat.¹¹⁵ From here griddle plates spread to the Levantine coast, as seen in the late 3rd millennium BC examples from northern Lebanon at Tell Arqa (fig. 9.11, no. 1), and in Israel at Hazor (fig. 9.11, no. 2).¹¹⁶ The Levantine region and northern Egypt were in close contact throughout the 2nd millennium BC, and their respective bread traditions were heavily influenced by one another, leading to the co-evolution and diffusion of both conical bread moulds and bread trays from earlier proto-types in both the Levant and Egypt.¹¹⁷ As a consequence, Near Eastern griddle plates, in the form of both imports and local copies,¹¹⁸ have been found at Tell el-Dab'a (fig.

102 Boardman 2000, 365.

103 Boardman 2000, 365-368, fig. 323.

104 Dombrowski 1971, 148-149.

105 Bard et al. 1997, 394-395, 401; 2000, 78-79, fig. 4.

106 Lyon & D'Andrea 2003.

107 Cf. D'Andrea 2008, 553.

108 Cf. Lyons 2016: 965; Lyons & D'Andrea 2003, 526.

109 Boardman 2000, figs. 322-323.

110 Lyons 2007, 355-362; Lyons & D'Andrea 2003, 519.

111 Zukermann 2014; Chazon & Lehner 1990.

112 Balossi Restelli & Mori 2014; Jacquet-Gordon 1981.

113 E.g. tannur-style ovens (cf. Balossi Restelli & Mori 2014; Pasqualone 2018).

114 Zukermann 2014, 104-105, fig. 4, nos 1-5; the earliest dated example being from Tell Sukas, Syria (Oldenburg 1991, fig. 51, no. 11).

115 Balossi Restelli & Mori 2014, 43; Chazon & Lehner 1990, 30-31; Goulder 2014, 5.

116 Thalmann 2006, pl. 78, no. 10 (Tell Arqa); Yadin et al. 1961, pl. CXCVII, no. 5 (Hazor).

117 Chazon & Lehner 1990; Goulder 2014; Jacques-Gordon 1981; Zukermann 2014.

118 Cf. Aston 2004, 170-172; Zukermann 2014, 109-110.

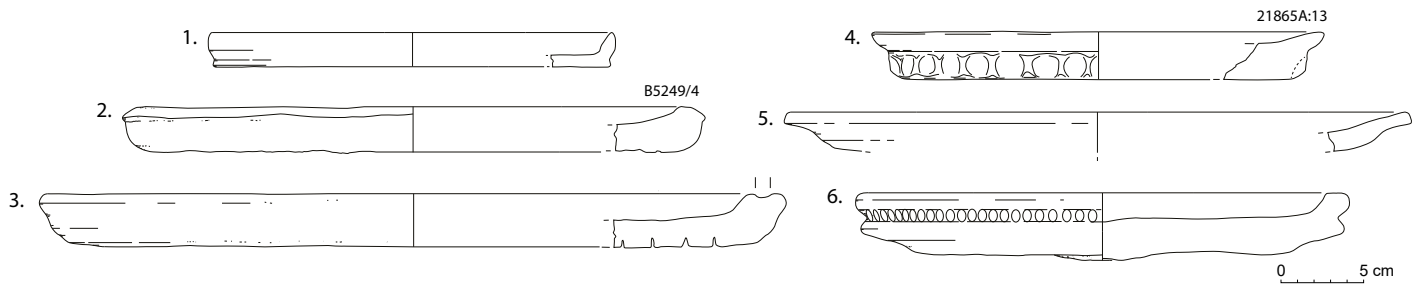


Fig. 9.11 Examples of 3rd and 2nd millennium BC ceramic griddle plates from the Levant and Egypt: 1. late 3rd millennium BC griddle plate from northern Lebanon at Tell Arqa; 2. late 3rd millennium griddle plate from northern Israel at Hazor; 3. late 3rd to early 2nd millennium BC griddle plate from northern Egypt at Tell el-Dab'a; 4. early 1st millennium BC (8th-7th century) griddle plate from southern Egypt at Elephantine; 5-6. late 3rd to early 2nd millennium BC griddle plates from the central Red Sea coast of Egypt at Mersa/Wadi Gawasis. Original drawings: 1. Thalmann 2006, pl. 78, no. 10; after Zukerman 2014, fig. 4, no. 3; 2. Yadin et al. 1990, pl. CXCvII, 5; after Zukerman 2014, fig. 1, 17; 3. Aston 2004, cat. no. 669; after Zukerman 2014, fig. 5, no. 1; 4. Aston 1999, pl. 27, no. 790; 5. Wallace-Jones 2018, fig. 128, no. 11; 6. *ibid.*: fig. 126, no. 6; used with permission. Drawings S. Büchner.

9.11, no. 3) in the Egyptian Nile delta, dating to the late 3rd to early 2nd millennium BC.¹¹⁹ Unfortunately these griddle plates have been subsumed within established ceramic classes for Pharaonic Egyptian bread trays, and have therefore received little attention in terms of their occurrence and chronology. Handmade coarse wares are typically overlooked in favour of wheelmade fine wares, especially in discussions of interregional interaction and cultural transmission.¹²⁰ The traditional emphasis upon the foodstuffs and food technologies of bread production in ritual contexts has meant that a broader range of technologies, such as those exhibited in domestic and non-elite contexts in Pharaonic Egypt, have not yet been fully explored. For example, griddle plates – albeit somewhat later (c. early 1st millennium BC) – are known from houses at Elephantine (fig. 9.11, no. 4).¹²¹ Here, and in Pharaonic Egyptian-influenced contexts in northern Sudan, barley has also been increasingly reconsidered as a plausible staple foodstuff, including for the production of bread, rather than as just a famine food or for animal fodder.¹²² The key characteristic traditionally emphasised in comparison with African cereals is that Near Eastern cereals contain gluten, and therefore can be used to produce a dough that is both viscous and elastic.¹²³ Whilst barley contains gluten, its chemical composition differs from that of wheat, and as a consequence it produces flat, unleavened bread.¹²⁴ Barley can be soaked, wet milled and then fermented to produce a batter, whose properties are similar to that made of African cereals, and which can be used to make pancake flatbreads.

9.5 Culinary connections

To summarise our interregional *dégustation*, we are now ready to trace, however tentatively, some first observations

on our culinary journey (fig. 9.12).¹²⁵ Our earliest known griddle plate in northeast Africa – dated to the beginning of the 2nd millennium BC – comes from Mahal Teglinos in Eastern Sudan (fig. 9.7, no. 1). Earlier examples are known only from the Levant, having developed in northern Mesopotamia out of local 4th millennium BC bread tray traditions, and spreading into the southern Levant (process 1), as seen in the examples from Tell Arqa and Hazor, which date to the mid-3rd millennium BC (e.g. fig. 9.11, nos. 1-2). Interaction between northern Egypt and the southern Levant during the late 2nd millennium BC (process 2), including transmission of food technologies concerning bread production, saw the griddle plate traditions introduced to Egypt in the First Intermediate period (late 2nd millennium BC), as seen at Tell el-Dab'a (fig. 9.11, no. 3).

Is it possible that the appearance of the griddle plate at Mahal Teglinos can be attributed to these processes? It is certainly significant that Pharaonic Egyptian pottery dating to the First Intermediate period has also been recovered at Mahal Teglinos, though it differs from the Egyptian ceramics more commonly found in northern Sudan.¹²⁶ The Nile was an important route of cultural transmission between Egypt and Sudan, and although little Near Eastern or Canaanite influence reached Central Sudan during this period, that which did typically took the form of food-related artefacts.¹²⁷ The Nile route south from northern Egypt in terms of of griddle-plate diffusion therefore seems to belong to a slightly later period, perhaps the end of the 2nd millennium BC (process B), for examples from Elephantine (fig. 9.11, no. 4)

119 Zukermann 2014, 108-110, fig. 5, 1; see also no. 2; Aston 2004, cat. no. 669.

120 Cf. Matthews & Nowotnick 2019, 474.

121 Aston 1999, pl. 27, no. 790.

122 E.g. Anderson et al. 2007; Cappers et al 2014; Maillot 2016.

123 Cf. Lyons & D'Andrea 2003, 524.

124 Lyons & D'Andrea 2003, 525; Tomber 2013, 124.

125 This preliminary model is based firstly on formal (i.e. morphological) similarity, and secondarily on observations of use traces, as well as chronology. These do not address the thorny issue of determining homologous from analogous similarity, a central concern in discussing cultural transmission and diffusion (see discussion above). To address these issues, a more detailed analysis, incorporating dimensional change in form, fabric, and organic residue, in conjunction with cladistics, is currently being undertaken by the Connecting Foodways project.

126 Manzo 2017a, 35-36, fig. 26.

127 E.g. Canaanite storage vessels found at Hillat el Arab, near Jebel Barkal: Vincentalli 1999, fig. 3, no. 10.

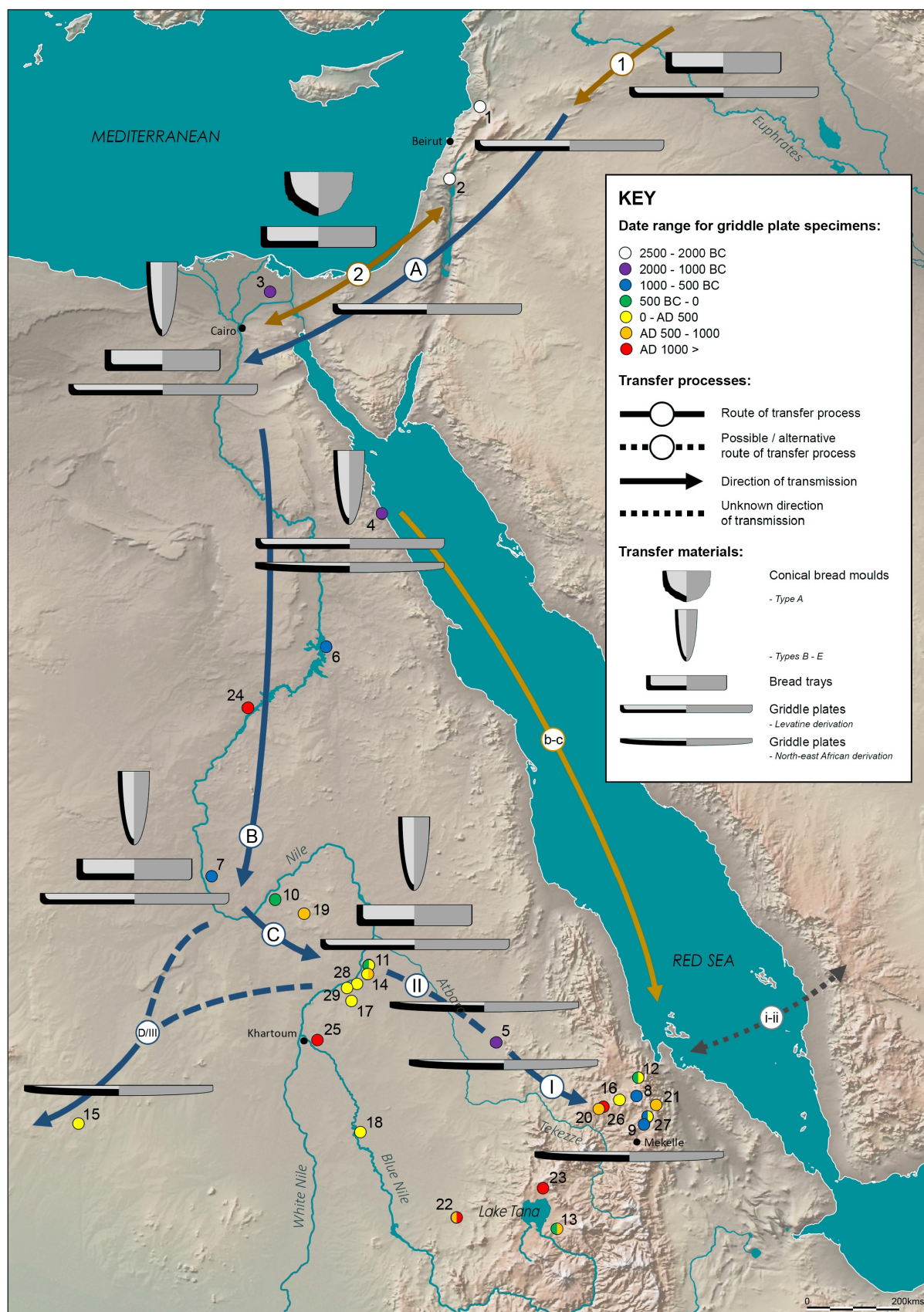


Fig. 9.12 Diffusion model of ceramic griddle plate and other bread technologies in the Near East and northeast Africa, showing routes of transmission and date ranges for relevant specimens. Sites as discussed in the text (date ranges express that of find contexts rather than that of overall site duration): 2500-1000 BC: 1. Tell Arqa; 2. Hazor. 2000-1000 BC: 3. Tell el-Dab'a; 4. Mersa/Wadi Gawasis; 5. Mahal Teglinos. 1000-500 BC: 6. Elephantine; 7. Kawa; 8. Mezber; 9. Ziban Adi; likely in this date range: 27. Gud Bahri. 500 BC-0: 10. Nuri; 11. Meroe; 12. Matara; 13. Lalibela and Natchabiet caves. 0-AD 500: 11. Meroe; 12. Matara; 14. Hamadab; 15. Zankor; 16. Beta Samati; 17. Musawwaret; 18. Abu Geili; likely in this date range: 27. Gud Bahri; 28. Muweis; 29. El-Hassa. AD 500-1000: 13. Lalibela and Natchabiet caves; 14. Hamadab; 19. Tuweina; 20. Kidane Mehret; 21. Wakarida and Sebdera region; 22. Jebel Gerara. AD 1000 onwards: 22. Jebel Gerara; 23. Gännätä Iyasus; 24. Arminna West; 25. Soba East; 26. Seglamon. Map S. Matthews.



and Kawa, and the 1st millennium BC (process C), as seen at Nuri (fig. 9.7, no. 7), and Meroe (fig. 9.7, no. 8).

Instead, an alternative to the Nile was offered by the route south along the Red Sea coast (process b-c), which was active from the mid- to late 3rd millennium BC, as evidenced by the northern Red Sea port of Mersa/Wadi Gawasis.¹²⁸ Besides local and regional pottery, Canaanite ceramics have also been found at Mersa/Wadi Gawasis, as well as evidence for imported Levantine cedar used in the construction of ships.¹²⁹ Pottery from northern Sudan was also recovered, as well as pottery deriving from the Gash and Jebel Mokram groups of Eastern Sudan, as found at Mahal Teglinos.¹³⁰ Of particular significance is the range of ceramics related to bread production found on the site. Bread moulds of typical Egyptian derivation are present, whilst bread trays are absent, replaced by a range of griddle plates which most closely resemble Levantine and Ethio-Eritrean forms (fig. 9.11, nos. 5-6).¹³¹

From the distribution and dating of finds, it seems that the transmission of griddle plate traditions had multiple routes of diffusion, and likely involved different transmission processes. The occurrence of griddle plates in Eastern Sudan may belong to more formal mechanisms, involving the movement of people in the context of trade and exchange (process b-c). By contrast, transmission in northern and central Sudan may have involved longer, more drawn-out processes (process B-C), both formal, in relation to the developing Kushite state, and informal, in terms of its adoption into local domestic culinary traditions. The development or adoption of griddle plates in the Ethio-Eritrean highlands owes nothing to the latter (process C), given the early 1st millennium dates for griddle plates at Ziban Adi (fig. 9.7, no. 2) and Mezber. Whilst griddle plates have not been found in the western reaches of Tigray during this period, pottery belonging the Gash and Jebel Mokram groups of Eastern Sudan has, suggesting contact with the communities of Eastern Sudan (process I).

An alternative trail for the transmission of griddle plate technologies into Tigray may also be via southern Arabia (process i). Given the earlier development of griddle plates in Tigray, it is possible that contact with Eastern Sudan also influenced transmission of griddle plate traditions into the Nile valley around the Meroe region (process II), rather than from the north (process C), though the dating of finds and the differing nature of social and political organisation in the two regions might suggest otherwise.

These connections, all of which are plausible, effectively established a proto-historic pattern for griddle plate traditions across northeast Africa, as far west as Kordofan (process D/III), of which later historical developments and transmission took advantage (process D/III) (e.g. fig. 9.7, nos. 5, 6 and 15).

Some final remarks should be made on the nature of these transfer processes, for across such a huge area and over such spans of time, the mechanisms of diffusion will have been neither similar nor have remained the same. Cultural transmission occurred through formal processes, such as trade and exchange, as well as through various kinds of population movements, including migration, resulting in a highly dynamic area, much as it is today. There is little need to comment on these traditional, largely formal mechanisms for diffusion familiar to all archaeologists, also including invasion. These mechanisms may largely typify our processes 1-2, A-C, and certainly the Red Sea connections underlying processes b-c and i.

However, griddle plates are typically handmade, coarse ware cooking vessels. As a consequence, they are largely household products, linked to domestic culinary practice and activities. Much as they are today, such tasks were probably controlled by women, and exemplify the central role that women often played in mediating and maintaining cultural traditions¹³². Women also contributed significantly to the evolution of such traditions, through innovation and cultural transmission, via control of the production and use of such cooking vessels¹³³, as a consequence of processes such as marriage, migration and marketplace exchange.¹³⁴ It is these sorts of mechanisms that we may seek to link to processes I and II, as well as those of processes D/II, and which may ultimately prove more historically interesting upon greater investigation. Here the transfer mechanisms may have involved a domestic mode of diffusion, as a consequence of the close association of griddle technologies with household food preparation, as well as the production of such technologies.

In the long-term temporal perspective afforded archaeology, people moved. This includes not only formal movement, such as trade and exchange, but also the gradual spatial shift of community groups through the relocation of settlements over the millennia timespans with which we have been concerned. The movement of particular kinds of individuals, in particular women, via migratory marriage structures such as virilocal matrimony,¹³⁵ may also have played a pivotal role in cultural transmission, especially in terms of the diffusion of culinary traditions.

9.6 Conclusion

Handmade, coarse pottery is not typically used in archaeology to study interregional interaction and cultural transmission, which has traditionally relied instead upon wheelmade, fine wares or decorated pottery. As a consequence, griddle plates in northeast Africa are typically considered a local innovation, developing in conjunction with

128 Bard & Fattovich 2007.

129 Fattovich 2012.

130 Cf. Manzo 2010.

131 Bard & Fattovich 2007: 69, 74; Wallace-Jones 2018, 24-32, 35, 53, figs. 76, 108-109, 126.6, 128.5-11

132 Nowotnick, forthcoming b.

133 Fattovich et al. 2000, 82; D'Andrea et al. 1999; Lyons & Freeman 2009.

134 Frankel 2006, 22, tab. 4.2; Mills 2018; Nieuwhof 2017.

135 Wherein a married couple resides with/near the husband's parents; e.g. Nieuwhof 2015, 42, 174-176; 2017.



the domestication of African cereals. The chronological and spatial occurrence of griddle plates in both Sudan and the Ethio-Eritrean highlands does not, however, run parallel with the domestication of teff or sorghum. Alternatively, their development has been linked to the use of wild African cereals. Griddle plate cuisines employ the same basic foodstuffs and similar preparation techniques as local porridge traditions, which can be associated with the use of wild African cereals.

If griddle plates did develop through similar usage, we would have expected to see them included amongst earlier pottery assemblages in the region but they are absent. Instead, the appearance of griddle plates is contemporary with the development of wider networks of contact across northeast Africa and to neighbouring regions, including Egypt and the Near East, all of which show similar griddle plate traditions. More importantly, the global historical and contemporary record for griddle plates shows that they are used in conjunction with a diverse range of foodstuffs. Given the interconnectedness of northeast Africa and the earlier dates suggested for griddle plates in the Levant, we suggest that they may in fact have diffused from this area into Sudan and Ethiopia, in conjunction with the use of barley. This Near Eastern cereal, especially in association with the use of griddle plates, had properties similar to those of African cereals, especially sorghum and teff, in the production of local porridges. The griddle plate therefore represented a transferable technology, easily incorporated and adapted to suit pre-existing indigenous culinary traditions in northeast Africa.

To conclude, it seems likely that the use of a Near Eastern crop, especially barley, was a key component of early flatbread traditions in northeast Africa, rather than predicated solely on the development of domesticated African cereals. However, in the case of the early Eastern Sudan emergence of the griddle plates, it remains unclear whether these represent homologous or analogous food technologies, relating to the contemporary griddle-based bread traditions found in the Levant, and which diffused to Pharaonic Egypt. Whilst we must not lose sight of the very real possibility of local innovation, the position of Eastern Sudan relative to putative trade routes that ran between the Red Sea and northern Sudan, may have provided further routes of technological transmission, into what was and remains a highly dynamic area of cultural and culinary interaction.

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Literature

- Anderson, J.R., A.C. D'Andrea, A. Logan & S. Mohamed Ahmed, 2007: Bread moulds from the Amun Temple at Dangeil, Nile State – an addendum. *Sudan and Nubia* 11, 89-93.
- Anfray, F., 1966: La poterie de Matara. *Rassegna Di Studi Etiopici* 23, 5-74.
- Anfray, F., 1967: Maṭarā. *Annales d'Éthiopie* 7, 33-88.
- Anfray, F., 2012: Matara: The archaeological investigation of a city of ancient Eritrea. *Palethnologie de l'Afrique, Palethnologie* 4, 11-48.
- Arranz-Otaegui, A., L. Gonzalez Carretero, M.N. Ramsey, D.Q. Fuller & T. Richter, 2018: Archaeobotanical evidence reveals the origins of bread 14,400 years ago in northeastern Jordan. *PNAS* 115/31, 7925-7930.
- Aston, D.A., 1999: *Elephantine XIX: Pottery from the Late New kingdom to the Early Ptolemaic Period*. Mainz.



- Aston, D.A., 2004: *Tell el-Dab'a XII: A corpus of Late Middle kingdom and Second Intermediate Period pottery*. Vienne.
- Bakker, M. & L.A. van Sambeek, 2018: Keramische artefacten en verbrande kleiresten uit een nederzetting op het veen. In: M. Bakker, G.J. de Langen & T. Sibma (eds), *Opgraving Sneek-Harinxmaland: Van vlaknederzetting in een veengebied tot afgetopte terp onder een kleipakket* (Gronsporen 36). Groningen, 127-137.
- Bakker, M. & T.W. Varwijk, 2019: Huisraad uit een vroege ontginningsnederzetting bij Arkum: Het onderzoek aan het aardewerk, de keramische artefacten en de verbrande kleiresten. In: M. Bakker & G.J. de Langen (eds), *Opgraving Tjerkwerd-Arkum: Ontginning en hergebruik van een later verdwenen (klei-op-)veenlandschap* (Grondsporen 46). Groningen, 127-162.
- Balossi Restelli, F. & L. Mori, 2014: Bread, baking moulds and related cooking techniques in the Ancient Near East. *Food and History* 12/3, 39-55.
- Bard, K.A. & R. Fattovich, 2007: *Harbor of the pharaohs to the land of Punt: Archaeological investigations at Mersa/Wadi Gawasis, Egypt, 2001-2005*. Naples.
- Bard, K.A., R. Fattovich, A. Manzo & C. Perlingieri, 1997: Archaeological investigations at Bieta Giyorgis (Aksum), Ethiopia: 1993-1995 field seasons. *Journal of Field Archaeology* 24/4, 387-403.
- Bard, K.A., M. Coltorti, M.C. DiBlasi, F. Dramis & R. Fattovich, 2000: The environmental history of Tigray (northern Ethiopia) in the Middle and Late Holocene: A preliminary outline. *African Archaeological Review* 17/2, 65-86.
- Bardel, A. & R. Pérennec, 2020: Les galettières en céramique onctueuse. In: A. Bardel, P. Harismendy, F. Labaune-Jean & R. Pérennec (eds), *Et vous? Etes-vous plutot crêpe ou galette?* Spézet, 21-23.
- Bardel, A., P. Harismendy, F. Labaune-Jean & R. Pérennec (eds), 2020: *Et vous? Etes-vous plutot crêpe ou galette?* Spézet.
- Barnard, H. & J.W. Eerkens, 2016: Assessing vessel function by organic residue analysis. In: A. Hunt, H. Barnard & J.W. Eerkens (eds), *The Oxford handbook of archaeological ceramic analysis*. Oxford, 624-648.
- Beldados, A. & L. Costantini, 2011: Sorghum exploitation at Kassala and its environs, north eastern Sudan in the second and first Millennia BC. *Nyame Akuma* 75, 33-39.
- Benoist, A., 2019: Wakarida: Le mission archéologique dans le Tigray oriental (Éthiopie) vue par le petit bout de la lorgnette, pt. 3/3. *ArchéOrient – Le Blog*, 21 juin 2019; <http://archeorient.hypotheses.org/12237>.
- Benoist, A., I. Gajda, S. Matthews, J. Schiettecatte, N. Blond, S. Büchner & P. Wolf, 2020a: On the nature of South Arabian influences in Ethiopia during the late first millennium BC: A pre-Aksumite settlement on the margins of the eastern Tigray plateau. *Proceedings of the Seminar for Arabian Studies* 50, 19-36.
- Benoist, A., I. Gajda & J. Schiettecatte, 2020b: *French-Ethiopian Archaeological Mission in Eastern Tigray, Ethiopia - report on the 2020 season: The Region of Wolwalo*. Paris/Lyon.
- Berhe, H., M. Haftu, S. Abrha, D. Haileyesus, A. Bekerie, G. Teklu, S. Fiqadu & A. Kiros, 2020: Preliminary report on a test excavation at the ancient iron smelting site of Gud Bahri (Wuqro, Tigray). *Annales d'Éthiopie* 33, 167-188.
- Boardman, S.J., 1999: The agricultural foundation of the Aksumite empire, Ethiopia. In: M. van der Veen (ed.), *Plants and people in Africa: Recent archaeobotanical evidence*. New York, 137-147.
- Boardman, S.J., 2000: Archaeobotany. In: D.W. Phillipson (ed.), *Archaeology at Aksum, Ethiopia, 1993-1997*. London, 363-368.
- Cappers, R., F. Heinrich, S. Kaaijk, F. Fantone, J. Darnell & C. Manassa, 2014: Barley revisited: Production of barley bread in Umm Mawagir (Kharga Oasis, Egypt). In: K. Accetta, R. Fellingner, P. Lourenço Gonçalves, S. Musselwhite & W.P. van Pelt (eds), *Current research in egyptology 2013*. Oxford, 49-63.
- Chazon, M. & M. Lehner, 1990: An ancient analogy: Pot baked bread in ancient Egypt and Mesopotamia. *Paléorient* 16/2, 21-35.
- Collar, C., 2016: Bread: Types of bread. In: B. Caballero, P.M. Finglas & F. Toldra (ed.), *Encyclopedia of food and health*. Oxford, 500-507.
- Crawford, O. & F. Addison, 1951: *Abu Geili, Saqadi and Dar el Mek: The Wellcome excavations in the Sudan (vol. III)*. Oxford.
- Cuthrell, R., 2014: Acorn use in native California. In: A. Chevalier, E. Marinova & L. Peña-Chocarro (eds), *Plants and people: Choices and diversity through time*. Oxford, 150-155.
- D'Andrea, A.C., D. Lyons, M. Haile & A. Butler, 1999: Ethnoarchaeological approaches to the study of pre-historic agriculture in the Ethiopian highlands. In: M. van der Veen (ed.), *Plants and people in Africa: Recent archaeobotanical evidence*. New York, 101-122.
- D'Andrea, A.C., 2008: Teff (*Eragrostis tef*) in ancient agricultural systems of highland Ethiopia. *Economic Botany* 62/4, 547-566.
- D'Andrea, A.C., L. Perry, L. Nixon-Darcus, A.G. Fahmy & E.A. Attia, 2018: A pre-Aksumite culinary practice at the Mezber site, northern Ethiopia. In: A.M. Mercuri, A.C. D'Andrea, R. Fornaciari & A. Höhn (eds), *Plants and people in the African past: Progress in African archaeobotany*. Cham, 453-478.
- Deacon, J., 1984: Later Stone Age people and their descendants in southern Africa. In: R.G. Klein (ed.), *Southern African prehistory and paleoenvironments*. Rotterdam, 221-228.
- Dirar, H.A., 1993: *The indigenous fermented foods of the Sudan: A study in African food and nutrition*. Wallingford.



- Dombroski, J.C., 1971: *Excavations in Ethiopia: Lalibela and Natchabiet caves, Begemedar providence* (= unpublished dissertation, University of Boston). Boston.
- Dufton, H., 1970 [1867]: *Narrative of a Journey through Abyssinia in 1862–3*. Westport.
- Dunham, D., 1955: *The royal cemeteries of Kush, volume II: Nuri*. Boston.
- Edwards, D.N., 1996: Sorghum, beer and kushite Society. *Norwegian Archaeological Review* 29/1, 65-77.
- Edwards, D.N., 2003: Ancient Egypt in the Sudanese Middle Nile: A case of mistaken identity? In: D. O'Connor & A. Reid (eds), *Ancient Egypt in Africa*. London, 137-150.
- Eigner, D. & T. Karberg, 2013: W.A.D.I. 2013 – Die bauaufnahme der ruinen von El Tuweina. *Mitteilungen der Sudanarchäologischen Gesellschaft zu Berlin e.V.* 24, 51-58.
- Fattovich, R., 2012: Egypt's trade with Punt: New discoveries on the Red Sea coast. *British Museum Studies in Ancient Egypt and Sudan* 18, 1-59.
- Fattovich, R., K.A. Bard, L. Petrassi & V. Pisano, 2000: *The Aksum archaeological area: A preliminary assessment*. Naples.
- Fitzenreiter, M., A. Seiler & I. Gerullat, 1999: *Musawwarat es-Sufra II: Die kleine Anlage* (= Meroitica 17/1). Wiesbaden.
- Frankel, D., 2006: Becoming Bronze Age: Acculturation and enculturation in third millennium BC Cyprus. In: J. Clarke (ed.), *Archaeological perspectives on the transmission and transformation of culture in the Eastern Mediterranean*. Oxford, 18-24.
- Fuller, D.Q., 2004: Early Kushitic agriculture: Archaeobotanical evidence from Kawa. *Sudan and Nubia* 8, 70-74.
- Fuller, D.Q., 2007: Contrasting patterns in crop domestication and domestication rates: Recent archaeobotanical insights from the Old World. *Annals of Botany* 100/5, 903-924.
- Fuller, D.Q. & L. Gonzalez Carretero, 2018: The archaeology of Neolithic cooking traditions: Archaeobotanical approaches to baking, boiling and fermenting. *Archaeology International* 21/1, 109-121.
- Fuller, D.Q. & E. Hildebrand, 2013: Domesticating plants in Africa. In: P. Mitchell & P.J. Lane (eds), *The Oxford handbook of African archaeology*. Oxford, 507-526.
- Fuller, D.Q. & M. Rowlands, 2011: Ingestion and food technologies: Maintaining differences over the long-term in west, south and east Asia. In: T.C. Wilkinson, S. Sherratt & J. Barrett (eds), *Interweaving worlds: Systemic interactions in Eurasia, 7th to 1st Millennia BC*. Oxford, 37-60.
- Garnier, N., 2016: Quel rôle pour les chimistes dans les recherches en archéologie? In: D. David (ed.), *Histoires matérielles*. Autun, 31-49.
- Garnier, N., 2020: Les analyses physicochimiques. In: A. Bardel, P. Harismendy, F. Labaune-Jean & R. Pérennec (eds), *Et vous? Etes-vous plutôt crêpe ou galette?* Spézet, 24.
- Gaudiello, M., 2014: *La ceramica pre-Askumita di Seglamen (Tigray, Etiopia): Tecnologia, classificazione e significato culturale* (= unpublished dissertation, Università degli Studi di Napoli "L'Orientale"). Naples.
- Gocmen, D., A. N. Inkaya & E. Aydin, 2009: Flat breads. *Bulgarian Journal of Agricultural Science* 15/4, 298-306.
- González Carretero, L., M. Wollstonecroft & D.Q. Fuller, 2017: A methodological approach to the study of archaeological cereal meals: a case study at Çatalhöyük East (Turkey). *Vegetation History and Archaeobotany* 26/4, 415-432.
- González-Ruibal, A. & A. Falquina, 2017: In Sudan's eastern borderland: Frontier societies of the Qwara region (ca. AD 600-1850). *Journal of African Archaeology* 15/2, 173-201.
- González-Ruibal, A., 2021: The cosmopolitan borderland: western Ethiopia c. AD 600–1800. *Antiquity* 95/380, 530-548.
- Goulder, J., 2014: *The Uruk bevel-rim bowl: Production-line technology in design and function*. http://www.jgoulder.com/archaeology/Goulder_2014_The_Uruk_bevel-rim_bowl_Production.pdf.
- Gratien, B. (ed.), 2013: *Abou Sofyan et Zankor: Prospections dans le Kordofan occidental (Soudan)*. Villeneuve d'Ascq.
- Gremillion, K.J., 2011: *Ancestral appetites: Food in prehistory*. Cambridge.
- Griffin-Kremer, C., 2014: 'Humble plants': Uses of furze and nettles in the British Isles and beyond. In: A. Chevalier, E. Marinova & L. Peña-Chocarro (eds), *Plants and people: Choices and diversity through time*. Oxford, 270-275.
- Grzymski, K.A., 2003: *Meroe Reports I*. Mississauga.
- Haaland, R., 2006: Africa and the Near East: Pot and porridge, bread and oven – two food systems maintained over 10,000 years. In: H.-P. Wotzka (ed.), *Grundlegungen: Beiträge zur europäischen und afrikanischen Archäologie für Manfred K. H. Eggert*. Tübingen, 243-254.
- Haaland, R., 2007: Porridge and pot, bread and oven: Food ways and symbolism in Africa and the Near East from the Neolithic to the present. *Cambridge Archaeological Journal* 17/2, 165-182.
- Haaland, R., 2012: Changing food ways as indicators of emerging complexity in Sudanese Nubia: From Neolithic agropastoralists to the Meroitic civilisation. *Azania* 47/3, 327-342.
- Hansson, A.-M., 1994: Grain-paste, porridge and bread: Ancient cereal-based food. *Laborativ Arkeologi* 7, 5-10.
- Harrower, M. J., I.A. Dumitru, C. Perlingieri, S. Nathan, K. Zerue, J.L. Lamont, A. Bausi, J.L. Swerida, J.L., Bongers, H.S. Woldekiros, L.A. Poolman, C.M. Pohl, S.A. Brandt & E.A. Peterson, 2019: Beta Samati: Discovery and excavation of an Aksumite town. *Antiquity* 93/372, 1534-1552.
- Hastorf, C.A., 2016: *The social archaeology of food: Thinking about eating from prehistory to the present*. Cambridge.



- Heiss, A.G., 2015: Bread. In: K.B. Metheny & M.C. Beaudry (eds), *Archaeology of food: An encyclopedia*. London, 70-75.
- Ishag, E.Y., 2016: *La céramique de Zankor: Étude typologique de la production du Kordofan, Soudan* (= unpublished post-doctoral thesis, University of Neuchâtel). Neuchâtel.
- Jacquet-Gordon, H., 1981: A tentative typology of Egyptian bread molds. In: H.D. Arnold (ed.), *Studien zur altägyptischen Keramik*. Mainz am Rhein, 11-24.
- Kroeber, A.L., 1931: Historical reconstruction of culture growths and organic evolution. *American Antiquity* 33/2, 149-156.
- Kumar, A., 2016: Chapatis and related products. In: B. Caballero, P.M. Finglas & F. Toldra (ed.), *Encyclopaedia of food and health*. Oxford, 724-734.
- Lyman, R.L., 2001: Culture historical and biological approaches to identifying homologous traits. In: T.D. Hurt & G.F. Rakita (ed.), *Style and function: Conceptual issues in evolutionary archaeology*. London, 69-89.
- Lyman, R. L., M.J. O'Brien & R.C. Dunnell, 1997: *The rise and fall of culture history*. London.
- Lyons, D., 2007: Integrating African cuisines: Rural cuisine and identity in Tigray, highland Ethiopia. *Journal of Social Archaeology* 7/3, 346-371.
- Lyons, D., 2016 (3rd ed.): Bread in Africa. In: H. Selin (ed.), *Encyclopaedia of the history of science, technology, and medicine in non-western cultures*. London, 963-974.
- Lyons, D. & A.C. D'Andrea, 2003: Griddles, ovens, and agricultural origins: An ethnoarchaeological study of bread baking in highland Ethiopia. *American Anthropologist* 105/3, 515-530.
- Lyons, D. & A.C. D'Andrea, 2008 (2nd ed.): Bread in Africa. In: H. Selin (ed.), *Encyclopaedia of the history of science, technology, and medicine in non-western cultures*. Berlin, 413-418.
- Lyons, D. & A. Freeman, 2009: "I'm not evil": Materialising identities of marginalised potters in Tigray Region, Ethiopia. *Azania* 44/1, 75-93.
- Madella, M., J. García-Granero, W. Out, P. Ryan & D. Usai, 2014: Microbotanical evidence of domestic cereals in Africa 7000 years ago. *PLoS One* 9/10, 1-9.
- Maillot, S., 2016: Two firing structures from ancient Sudan: An archaeological note. *Dotawo* 3, 41-56.
- Manzo, A., 2010: Exotic ceramic materials from Mersa Gawasis, Red Sea, Egypt. In: W. Godlewski & A. Łajtar (eds), *Between the Cataracts*. Warsaw, 439-453.
- Manzo, A., 2017a: *Eastern Sudan in its setting: The archaeology of a region far from the Nile valley*. Oxford.
- Manzo, A., 2017b: The territorial expanse of the pan-grave culture thirty years later. *Sudan and Nubia* 21, 98-112.
- Matthews, S. & S. Büchner, 2016: Before Aksum: Excavating Ethiopia's earliest civilisation. *Current World Archaeology* 79, 14-21.
- Matthews, S. & S. Büchner, in press: DAI excavations at Ziban Adi, near Wuqro: A 'provincial palace' of the pre-Aksumite period? In: I. Gajda & A. Benoist (eds), *Recent historical and archaeological research in Ethiopia. Proceedings of the international conference on Archaeology in ancient Ethiopia. 14-16 April 2016, Paris*. Oxford.
- Matthews, S. & U. Nowotnick, 2019: Culinary interactions: connecting foodways in Early Iron Age Africa. *Azania* 54/4, 468-486.
- Mills, B.J., 2018: Inter-marriage, technological diffusion, and boundary objects in the U.S. Southwest. *Journal of Archaeological Method and Theory* 25/4, 1051-1086.
- Moy, R.M., 2019: *Fluid typologies: A critical examination of ceramic methods from Mai Adrasha, Ethiopia* (= unpublished dissertation, University of California). Los Angeles.
- Nieuwhof, A., 2014: De geschiedenis van Ezinge in scherpen. Handgevoormd aardewerk van 500 v.C. tot 1500 n.C. In: A. Nieuwhof (ed.), *En dan in hun geheel. De vondsten uit de opgravingen in de wierde Ezinge* (= Jaarverslagen van de Vereniging voor Terpenonderzoek 96). Groningen, 31-128.
- Nieuwhof, A., 2015: *Eight human skulls in a dung heap and more: Remains of rituals in the terp region of the Northern Netherlands, 600 BC-AD 300* (= dissertation, University of Groningen). Groningen.
- Nieuwhof, A., 2017: Potters and pottery from afar: Some observations on long-distance contacts. In: S. Semple, C. Orsini & S. Mui (eds), *Life on the edge: Social, political and religious frontiers in Early Medieval Europe*. Wendeburg, 295-303.
- Nowotnick, U., 2018: Napatan ceramics from the excavations at the Royal Baths in Meroe. *Cahiers de la céramique Égyptienne* 11, 209-230.
- Nowotnick U., forthcoming a: *Ceramic technology, production and use in an urban settlement on the Middle Nile. The pottery assemblage from Late Meroitic Hamadab (Sudan), ca. 2nd to 4th century AD* (= Archäologische Forschungen in Afrika 1). Berlin.
- Nowotnick U., forthcoming b: Glimpses into cooking practices – observations on past and present Sudanese griddle baking. *Afriques*.
- Nowotnick, U. & S. Matthews, 2020: Connecting foodways: Ein neues Projekt zu Esstraditionen in Nordost-Afrika und ihren kulturellen Verflechtungen. *e-Forschungsberichte des DAI* 2020/1, 78-84.
- O'Brien, M.J. & R.L. Lyman, 2000: *Applying evolutionary archaeology: A systematic approach*. London.
- Oldenburg, E., 1991: *Sūkās IX: The Chalcolithic and Early Bronze Age periods*. Copenhagen.
- Out, W., P. Ryan, J. Garcia-Granero, J. Barastegui, L. Maritan, M. Madella & D. Usai, 2016: Plant exploitation in Neolithic Sudan: A review in the light of new data from the cemeteries R12 and Ghaba. *Quaternary International* 412/B, 36-53.
- Parker, M.L., M. Umata & R.M. Faulks, 1989: The contribution of flour components to the structure of injera, an Ethiopian fermented bread made from tef (*Eragrostis tef*). *Journal of Cereal Science* 10/2, 93-104.



- Pasqualone, A., 2018: Traditional flat breads spread from the fertile crescent: Production process and history of baking systems. *Journal of Ethnic Foods* 5/1, 10-19.
- Phillips, J., 2000a: Pottery and clay objects ('The D site at Kidane Mehret'). In: D.W. Phillipson (ed.), *Archaeology at Aksum, Ethiopia, 1993-1997*. London, 303-337.
- Phillips, J., 2000b: Pottery and clay objects ('The K site in Maleke Aksum'). In: D.W. Phillipson (ed.), *Archaeology at Aksum, Ethiopia, 1993-1997*. London, 389-399.
- Phillipson, D.W., 2000: *Archaeology at Aksum, Ethiopia, 1993-1997*. London.
- Phillipson, D.W., 2012: *Foundations of an African Civilisation: Aksum and the Northern Horn 1000 BC-AD 1300*. London.
- Qarooni, J., 1996: *Flat bread technology*. New York.
- Qarooni, J., J.G. Ponte & S. Posner, 1992: Flat breads of the world. *Cereal Foods World* 37, 863-865.
- Ricci, L. & R. Fattovich, 1987: Scavi archeologici nella zona di Aksum: A Seglamien. *Rassegna di Studi Etiopici* 30, 117-169.
- Rodríguez Suárez, R. & J.R. Pagán Jiménez, 2008: The Burén in precolonial Cuban archaeology: New information regarding the use of plants and ceramic griddles during the late Ceramic Age of Eastern Cuba gathered through starch analysis. In: C.L. Hofman, M.L.P. Hoogland & A.L. van Gijn (eds), *Crossing the borders: New methods and techniques in the study of archaeological materials from the Caribbean*. Tuscaloosa, 159-169.
- Samuel, D., 2002: Bread in archaeology. *Civilisations* 49/1-2, 27-36.
- Shinnie, P.L. & R.J. Bradley, 1980: *The Capital of Kush*, vol. 1: Meroe Excavations 1965-1972 (Meroitica 4). Berlin.
- Simon, M (ed.), 1986: *L'abbaye de Landévennec, de saint Guénolé à nos jours*. Rennes.
- Taayke, E., 1996: *Die einheimische keramik der nördlichen Niederlande, 600 v.Chr. bis 300 n.Chr.* (= dissertation, Groningen University). Groningen.
- Thalmann, J.-P., 2006: *Tell Arqa I: Les niveaux de l'âge du Bronze*. Beyrouth.
- Tomber, R., 2013: Baking bread in Roman Egypt. In: B. Bader & M.F. Ownby (eds), *Functional aspects of Egyptian ceramics in their archaeological context*. Leuven, 119-137.
- Torres Rodríguez, J. de., 2017: Sherds of a kingdom: Historical pottery of the Lake Tana region (Northern Ethiopia). *African Archaeological Review* 34/2, 225-248.
- Twiss, K.C., 2019: *The Archaeology of food: Identity, politics, and ideology in the prehistoric and historic past*. Cambridge.
- Vincentelli, I., 1999: Two new kingdom tombs at Napata. *Sudan and Nubia* 3, 30-38.
- Wallace-Jones, S., 2018: *Egyptian and imported pottery from the Red Sea port of Mersa Gawsis, Egypt*. Oxford.
- Weeks, K.R., 1967: *The Classic Christian townsites at Arminna West*. New Haven.
- Welsby, D.A., 1996: *The kingdom of Kush: The Napatan and Meroitic empires*. London.
- Welsby, D.A., 2002: *The Medieval kingdoms of Nubia: Pagans, Christians and Muslims along the Middle Nile*. London.
- Welsby, D.A. & C.M. Daniels, 1991: *Soba: Archaeological research at a Medieval capital on the Blue Nile*. London.
- Wengrow, D., 2006: *The archaeology of early Egypt: Social transformations in North-East Africa, 10,000 to 2650 BC*. Cambridge.
- Wilding, R.F., 1989: The pottery. In: S.C. Munro-Hay (ed.), *Excavations at Aksum: An account of research at the ancient Ethiopian capital directed in 1972-4 by the late Dr Neville Chittick*. London, 235-316.
- Winchell, F., M. Brass, A. Manzo, A. Beldados, V. Perna, C. Murphy, C. Stevens & D.Q. Fuller, 2018: On the origins and dissemination of domesticated sorghum and pearl millet across Africa and into India: A view from the Butana group of the far Eastern Sahel. *African Archaeological Review* 35/4, 483-505.
- Winchell, F., C.J. Stevens, C. Murphy, L. Champion & D.Q. Fuller, 2017: Evidence for sorghum domestication in fourth millennium BC Eastern Sudan: Spikelet morphology from ceramic impressions of the Butana group. *Current Anthropology* 58/5, 673-683.
- Wolf, P., U. Nowotnick & C. Hof, 2014: The Meroitic urban town of Hamadab in 2010. In: J.R. Anderson & D.A. Welsby (eds), *The Fourth Cataract and beyond: Proceedings of the 12th International Conference for Nubian Studies*. Leuven, 719-738.
- Yadin, Y., Y. Aharoni, R. Amiran, A. Ben-Tor, M. Dothan, T. Dothan, I. Dunayevsky, S. Geva & E. Stern, 1961: *Hazor III-IV: An account of the third and fourth seasons of excavation, 1957-1958*. Jerusalem.
- Zuchora-Walske, C., 2009: *Chad in pictures*. Minneapolis.
- Zukerman, A., 2014: Baking trays in the second millennium BCE Levant and Egypt: Form, function and cultural significance. *Syria* 91, 99-125.

Embracing the salt marsh:
foraging, farming and food preparation in the
Dutch-German coastal area up to AD 1600
Studies in honour of Annet Nieuwhof



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Annet among the tall horse beans growing in her garden (July 2017), sprouted from beans harvested from the salt marsh the year before, as part of an archaeological experimental project concerning crop cultivation in the terp region.
Photo R. Immink, De Punt.

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BACK COVER	Drawing of the main part of Section A2, documented during excavations in the terp of Westeraccum (Landkreis Aurich, Germany). Each layer is numbered and coloured according to its type of deposit and inclusions. Drawing W. Schwarze, Ostfriesische Landschaft.
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Preface

Like other disciplines, the study of terps in the coastal area of the northern Netherlands has seen fluctuations in research intensity and changes in focus. First, from the 17th century on, researchers wondered whether terps as elevations in the landscape were man-made or natural phenomena. Later, during the period when many terps were quarried for their fertile soil (mid-19th to mid-20th century), research interest shifted to the layering and formation of these (indeed) man-made sites, and the rich collection of archaeological objects that were unearthed by the labourers. Moreover, the specific character of the salt-marsh landscape became a research subject in itself, with a special focus on the relation between sedimentation and sea-level rise. Also noteworthy is the very early attention for biological remains encapsulated in the terp mounds. Nowadays, terps, their finds and their natural setting still are the centre of interest, but with a gradual shift to include so-called off-site activities – including the exploitation of the salt marshes not only as pasture, but also for growing various crops. Parallel to this is the realization that since its first colonization in the 6th century BC a fully ‘natural’ salt marsh did not exist: large sections of this landscape were cultivated or otherwise used as part of a ‘cultural landscape’.

There are a wide variety of terms associated with human/environment relations, and many of these have been applied to parts of the northern clay district. These include terms as ‘man-made marshes’, ‘anthropogenic landscapes’, and the traditional divide between ‘natural landscapes’ and ‘cultural landscapes’ as mentioned above. Most of this terminology does not do justice to the fact that the landscape surrounding the terps was in fact the product of a complex interplay between physical-geographical, biological and cultural processes. Acknowledging this, the researcher to whom this book is dedicated co-introduced the phrase ‘synanthropic salt marsh’, a term that explicitly emphasizes the dynamic relationship between people and the environment they inhabit.

The current research themes, which come together in the content of this book, are closely related to the personal

interests of our dear colleague Annet Nieuwhof, who last year celebrated her 65th birthday. Some of these interests in a symbolic way coincide in a small, copper-alloy object that was found during excavations at the terp site of Englum, in the province of Groningen. This 5th-century object, measuring c. 11 cm, is an intact slide that once was fastened to the front of a sword-scabbard. The slide secured the sword-scabbard which was suspended from a shoulder-strap or baldric. Its front shows a floral decoration in chip-carving, as curling tendrils with small dots to represent leaves. These tendrils, which now adorn each page heading, refer to Annet’s keen interest not only in the natural elements within a landscape, but also in the human/nature balance (rather than a struggle!) that was of crucial importance in people’s striving to successfully inhabit and exploit a dynamic environment such as the salt marsh.

To mark Annet’s 65th birthday, a group of colleagues and friends each wrote a chapter about this human/nature relationship, approaching the subject from different angles. This *Liber amicorum*, however, starts off with a contribution by Egge Knol, who elaborates on why Annet is so deserving of this token of appreciation from her colleagues.

Subsequently, four contributions highlight various ways in which humans made use of the landscape. Annette Siegmüller does so on a conceptual level, introducing a model to assess the use of resources during the Roman Iron Age, based on the characteristics of the salt-marsh environment. In doing so, she makes explicit the need and capacity of terp dwellers to adapt to their special habitat. Gilles de Langen and Hans Mol focus on physical land division in the Middle Ages, using a retrogressive model that starts out from early-modern historical sources, and potentially allows us to look further back in time. Johan Nicolay and Hans Huisman delve into the salt-marsh soil on a macro- and micromorphological level, presenting an overview of cultivated horizons encountered in terp excavations, and discussing their implications for understanding the evolution of ploughing technology. This overview follows



The sword-scabbard slide from Englum, as a symbol of Annet Nieuwhof’s strong interest in the human/nature balance in a salt-marsh context. Scale 1:1. Photos J. Schokker, Noordelijk Archeologisch Depot.



the steep rise in cultivation horizons recognized in one modern form of terp research, by cleaning the escarpments of partially quarried terps. Ernst Taayke and colleagues train their sights on a different form of supposed human landscape modification, critically evaluating the radiocarbon dating and distribution of vegetation horizons across the Groningen landscape. On solid grounds they question earlier ideas about the degree to which humans were indeed responsible for their formation.

Two chapters present reviews of bio-archaeological find groups in the Dutch-German terp region. Mans Schepers and Karl-Ernst Behre highlight a group of botanical remains known to be rare in the area: edible fruits and nuts. They also discuss the likelihood that a number of wild plants known to have been abundant in the region were foraged by terp dwellers. Wietske Prummel and Hans Christian Küchermann discuss the use of animal-related products, taking into account both domestic and wild animals. Their overview shows clear and interesting trends, both in time and space.

Two chapters bring us even closer to the food itself. Tania Oudemans and Amy Kuiper highlight the potential of combining traditional typo-chronological pottery analyses with chemical residue analysis, pointing out some successful applications already realized in the area. In addition, they come up with a number of explicit suggestions for future endeavours along these lines. Steven Matthews' contribution takes us to northeast Africa, discussing flat-bread production and its connection with ceramic griddle plates, which are also known from the Dutch-German

terp sites. His contribution makes us realize that clues for interpreting the archaeological record need not necessarily come from nearby.

The importance of this international perspective explicitly speaks from the contributions in this volume, those by Dutch, German, and English authors as well as from two co-authored 'Dutch-German' papers and an African perspective that fascinatingly also is relevant to the archaeology of the terp region. As editors, we were gratified to see this volume develop, and to identify numerous potential connections between the various chapters, as well as a substantial number of explicit research ideas. A final contribution, by Jan Kegler, urges all researchers involved in terp archaeology to seek collaborations and to continue exchanging ideas across borders and (sub-)disciplines. A call that we wholeheartedly support.

We want to thank the contributors to this compilation for agreeing to write a chapter at quite short notice, and for keeping the subject of their contributions close to the theme of the book. Also we are grateful to Xandra Bardet (Groningen) for editing the English texts, and to Siebe Boersma (Groningen Institute of Archeology, University of Groningen) for designing the layout and transforming the texts and illustrations into beautiful chapters.

We wish Annet many more years in good health, as a good friend, as an enthusiastic terp researcher and now also as a proud grandmother.

Johan Nicolay & Mans Schepers